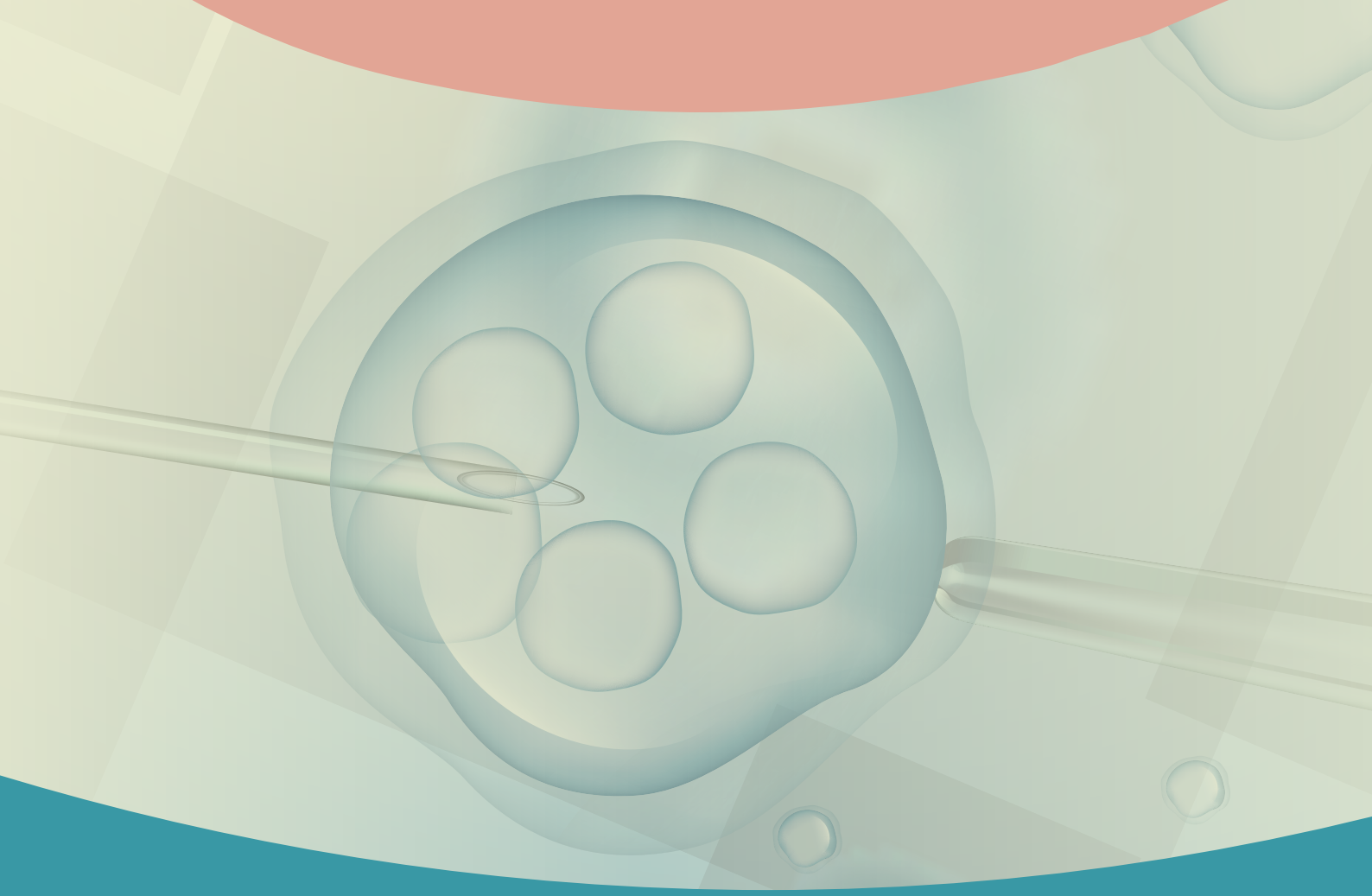
EMBRYO PROTECTION AUTHORITY

ANNUAL WORK REPORT

TRENDS AND FIGURES OF FERTILITY TREATMENTS IN MALTA FOR 2022



PUTTING PATIENTS FIRST

MARCH 2023

ANNUAL WORK REPORT

TRENDS AND FIGURES
OF FERTILITY TREATMENTS
IN MALTA FOR 2022

EMBRYO PROTECTION AUTHORITY

Putting Patients First

Presented to Deputy Prime Minister and Minister for Health

Hon Christopher Fearne

As per Embryo Protection Act Chapter 524,

ACT XXI of 2012 as amended by Acts XXIV of 2018 and XI of 2022

and

Subsidiary Legislation 524.02, Embryo Protection Authority (Protocol) Regulations

Embryo Protection Authority Regulations, LN32 of 2015 and LN343 of 2020

March 2023

EMBRYO PROTECTION AUTHORITY

PUTTING PATIENTS FIRST

ANNUAL WORK REPORT FOR 2022

"The Authority in Malta has been a key player to ensure that in an area that is very sensitive, the highest levels of standards are adhered to. The EPA has done this job well".

Mr Paul Sultana, Saint James Conception Unit in an interview with a local newspaper.

"The EPA has ranked highly in the EU. From our perspective, having opened a fertility clinic, the EPA has been helpful and meticulous".

Dr Christine Schembri Deguara, HOPE Fertility and IVF in an interview with a local newspaper.

Dedicated to all prospective parents who have embarked this long and winding journey of Assisted Reproduction.

The Authority will continue to strive to see that the highest standards are offered in Malta, so that you may achieve your dream.

This is one of the many Testimonials we received from prospective parents undergoing treatment in Malta in 2022. This specific one is being reproduced, as it shows how with our humble and dedicated work, we are touching the lives and making a difference in the lives of those who seek our help. As Regulators we always offer a supporting arm to prospective patients.

"In these difficult times, you made our journey far less strenuous with all your help and support. Through your kindness you helped lift a big weight off our shoulders... which meant a lot to us during these hard times. Although to you it might seem your duty, to us it meant the world. We truly appreciate you. Thank you from the bottom of our hearts".

TABLE OF CONTENTS

	Page No.
Chief Executive Officer's Forward	**14**
1. BACKGROUND	**18**
1.1. The Embryo Protection Authority (EPA)	18
1.2. Our Principles – Patients First	19
1.3. Our Principles – Working closely with Stakeholders	20
1.4. The Legal Framework	20
1.5. Functions of the EPA	23
1.6. Board Members and Executive Administration	25
1.7. Annual Remuneration to Board Members	27
1.8. The Authority as a Regulator	28
1.9. Human Resources	39
1.9.1. Training of Staff	40
1.9.2. Staff Wellbeing and Team building	42
1.10. EU Competent Authority Meetings, Conferences, and other International meetings	43
1.10.1. EU Competent Authority Meetings	43
1.10.2. EU Substances of Human Origin – Vigilance Expert Subgroup (VES)	46
1.10.3. Other International Conferences	49
1.10.4. Other Local Conferences and Seminars	51
1.11. Embryo Adoption	53
1.12. Special Leave for Medically Assisted Procreation	55

1.13. Refund of Medication for Medically Assisted Procreation procedures carried out on the NHS 56
1.14. Changes to the Embryo Protection Act and Introduction of New services 57
1.15. Protocols 61
1.16. ART Prioritization Committee 68
1.17. Inspections 70
1.18. Incidents, investigations, and actions taken 72
1.19. Other work by the Authority 80
1.20. Annual submissions and debate in Parliament 84

FERTILITY TREATMENTS IN MALTA FOR 2022 - TRENDS & FIGURES

2. CYCLES PERFORMED 88

2.1. Cycles, Intrauterine Inseminations and Cryopreservations Approved by the Embryo Protection Authority Board 88
2.2. Intrauterine Inseminations 95
2.2.1 Intrauterine Inseminations with partner sperm 97
2.2.2 Intrauterine Inseminations with donor sperm 102
2.3. Cycles and Treatment Cycles carried out by the Tissue Establishments. (IVF/ICSI and Cryopreserved Embryo Treatment Cycles) 104
2.4. First Time/Repeated Cycles 109

3. DEMOGRAPHICS **111**

3.1. Nationality 111
3.2. Regions 113
3.3. Maternal Age 116
3.4. Paternal Age 120

4. INFERTILITY **123**

4.1. Duration of Infertility 123
4.2. Classification of Infertility 127
4.3. Indication for Infertility Factors 130

5. LIFESTYLE INDICATORS **135**

5.1. Body Mass Index 135

6. TYPE OF CYCLE **138**

6.1. Fresh vs Thawed 138
6.2. Additional Fertilization Requests (AFRs) 143

7. GAMETES **148**

7.1. Transfer of Gametes and Embryos 148
7.1.1 Transfer of Gametes and Embryos between local Clinics 148
7.1.2 Transfer of Gametes and Embryos to and from Tissue Establishments Abroad 149
7.2. Collection of Oocytes 151
7.3. Oocytes Discarded 157

7.4. Fresh vs Thawed Sperm 160
7.5. Storage of Gametes and Embryos 161
7.5.1. Storage of Oocytes 161
7.5.2. Storage of Sperm 164
7.5.3. 'Freeze-All' Oocytes Cycles 166
7.5.4. Embryo Cryopreservation 168
7.6. End of Storage 172
7.7. Total Storage 172

8. IVF/ICSI PROCEDURES 175

8.1. Cycles Started 175
8.2. Type of Procedure – IVF vs ICSI 175
8.3. Oocytes Injected and Fertilisation 177
8.4. Embryo Transfers 181
8.5. Embryo Transfers per Type of Cycle 183

9. TREATMENT CYCLE OUTCOMES 185

9.1. Pregnancies 185
9.2. Cycle Outcomes – Fresh vs Thawed Embryos 187
9.3. Cycle Outcomes – NHS vs Self-Funded 191
9.4. Pregnancies by Age 193
9.5. Pregnancy Rate per Embryos Transferred 195
9.6. Pregnancy Outcome for Donor Cycles 196
9.7. Pregnancy Distribution per ART Cycle Attempts 198
9.8. Miscarriages per ART Cycle 201
9.9. Miscarriages by Age 202
9.10. Miscarriages by Gestational Age 204
9.11. Miscarriages from Fresh vs Thawed Cycles 205

10. BIRTH EVENTS **206**

10.1. Births from July to December 2021 Cycles 206

10.2. Birth Events from 2022 Cycles -Fresh Oocytes vs Thawed Embryos 211

10.2.1. Expected Birth Events from Fresh Oocytes vs Thawed Embryos 214

10.3. Maximum Success Rate – Fresh vs Thawed 216

10.4. Percentage Maximum Success Rate – 'Take Home Baby' Rate 218

11. CONCLUSION **220**

LIST OF FIGURES AND TABLES

FIGURES **Page No**

Figure 1	Intrauterine Inseminations (partner sperm distribution per clinic	98
Figure 2	Distribution of IUI by Clinic	99
Figure 3	Intrauterine Inseminations Procedures per Couple	100
Figure 4	Intrauterine Inseminations with partner sperm – Take-Home Baby Rate	101
Figure 5	Intrauterine Inseminations with donor sperm – Take Home Baby Rate	103
Figure 6	Prospective parent/s per Cycle – NHS vs Self-Funded	104
Figure 7	ART Cycles per Prospective Parent	110
Figure 8	Total ART Cycles per Prospective Parent	110
Figure 9	Prospective Parents - Maltese and Foreign Nationals Resident In Malta	112
Figure 10	Distribution by Region – NHS	114
Figure 11	Distribution by Region – Self-Funded	114
Figure 12	Distribution by Region	115
Figure 13	Females by Age Group	117
Figure 14	Females by Age Group (%)	118
Figure 15	Males by Age Group	120
Figure 16	Males by Age Group (%)	121
Figure 17	Duration of Infertility (in years)	124

Figure 18	Duration of Infertility (in years) – NHS vs Self-Funded	126
Figure 19	Indication for Infertility Factors – NHS vs Self-Funded	131
Figure 20	Indication for Infertility Factors (%)	131
Figure 21	Female Infertility by Age Group	132
Figure 22	Female Infertility by Age Group (%)	133
Figure 23	Male Infertility by Age Group	134
Figure 24	Male Infertility by Age Group (%)	134
Figure 25	Body Mass Index of Females	137
Figure 26	Total AFR Requests NHS vs Self-Funded	146
Figure 27	AFR Requests NHS vs Self-Funded	147
Figure 28	Max & Min Oocytes Collected – Fresh Cycles by Age Group	152
Figure 29	Average Oocytes Discarded by Age Group – (Fresh vs Thawed vs Overall)	159
Figure 30	Fertilised vs Non-Fertilised of Injected Oocytes	178
Figure 31	Fertilised vs Non-Fertilised Oocytes (%)	178
Figure 32	% Embryos Created from Injected Oocytes – Fresh vs Thawed	180
Figure 33	Embryos Transferred per Cycle	182
Figure 34	% Cycles with Embryos Transferred from Fresh Oocytes vs Thawed Oocytes vs Thawed Embryos	184
Figure 35	Outcome – Fresh Cycles vs Thawed Cycles (NHS + Self-Funded)	186
Figure 36	Outcome of Fresh Cycles (Qty)	187
Figure 37	% Outcome - Fresh Cycles (NHS + Self-Funded)	188
Figure 38	Outcome of Thawed Embryos Cycles (Qty)	189

Figure 39	% Outcome - Thawed Embryo Cycles (NHS + Self-Funded)	189
Figure 40	Fresh Cycles - % Outcome (NHS vs Self-Funded)	191
Figure 41	Thawed Embryos Cycles - % Outcome (NHS vs Self-Funded)	192
Figure 42	Pregnancy by Age Group	193
Figure 43	Pregnancy Rate as % of Cycles per Age Group	194
Figure 44	Donor Cycles – Outcome (NHS vs Self-Funded)	197
Figure 45	NHS Pregnant vs Non-Pregnant Totals per ART Cycle Attempts	199
Figure 46	Self-Funded Pregnant vs Non-Pregnant Totals per ART Cycle Attempts	199
Figure 47	Total Pregnant vs Non-Pregnant per ART Cycle Attempts	200
Figure 48	Miscarriages per ART Cycle (NHS vs Self-Funded)	201
Figure 49	Miscarriages by Age Group	202
Figure 50	Miscarriages as % of Pregnancies in Age Group	203
Figure 51	Miscarriage by Gestational Age	204
Figure 52	Pregnancy Outcome % - Fresh vs Thawed	205
Figure 53	July-December '21 Live Births – Males vs Females	206
Figure 54	2021 Live Births – Males vs Females	207
Figure 55	2021 Live Births – Fresh Oocytes vs Thawed Embryos	208
Figure 56	2021 Live Births – NHS vs Self-Funded	208
Figure 57	2021 Live Birth Events – Singles vs Multiples	209
Figure 58	Live Birth Occurrences up to June 2022 Cycle	212
Figure 59	Gender of New-borns - Live Births up to June 2022 Cycle	212
Figure 60	NHS vs Self-Funded – Live Births up to June 2022 Cycle	213
Figure 61	Expected Birth Events (July to December 2022 Cycles)	215

Figure 62 NHS vs Self-Funded – Expected Birth Events (July to December 2022 Cycles) 215
Figure 63 % Cycles with Live or Expected Births from Total Cycles - Fresh Oocytes vs Thawed Embryos 217
Figure 64 % 'Take-Home Baby Rate – Fresh Oocytes vs Thawed Embryos 218

TABLES **Page No**

Table 1	Classification of Infertility	129
Table 2	Type of Procedure	140
Table 3	Oocytes Collected by Age Group	153
Table 4	Oocytes Collected by Age Group – NHS vs Self-Funded	154
Table 5	Oocytes collected for AMH ≤1μg/l	156
Table 6	Oocytes Discarded	158
Table 7	Fresh Cycles with NO Oocyte Vitrification	162
Table 8	Storage of Sperm	165
Table 9	Storage of Embryos since 2013	170
Table 10	Storage of Embryos distribution 2022	171
Table 11	Total Storage	172
Table 12	Embryos in storage per prospective parent	173
Table 13	Type of ART Procedures	176
Table 14	Oocytes Injected	177
Table 15	Embryos Created	179
Table 16	Cycles with Embryo Transfer per Type of Cycle (%)	183
Table 17	Cycle Outcome	185
Table 18	Pregnancy Rate per Embryos Transferred	195
Table 19	% Take-Home Baby Rate 2021	210
Table 20	% Maximum Success Rate – 'Take-Home Baby' Rate 2022	219

Chief Executive Officer's foreword

Welcome

It is my pleasure to present you with the Annual Report for 2022. This year's issue of the annual report coincides with the celebration of our 10th Anniversary. I still remember vividly the day when I was called to set up and lead this Authority. Ten years ago, when I was entrusted into getting this Authority off the ground and for the very first time have the Assisted Reproductive Sector regulated in Malta. It was not an easy task, however I proudly can say that we have attained so much in these ten years for our prospective parents. We have reached our 10th Anniversary this year, but as the saying goes, sometimes to move forward you have to look back. We have achieved so much in these ten years and some of our most important milestones in the last ten years, were when we made progressive changes to the ART Services and offered more access to prospective patients. Our stakeholders also acknowledge that as an Authority we have not only been a 'big brother' Regulator, very meticulous in the work that we do, but we have also fulfilled our functions of being a key player to ensure that in an area that is very sensitive, the highest levels of standards are adhered to, and that the EPA has done this job well.

2022 was another year which brought with it challenges as well as achievements. 2022 was a year filled with new challenges. Challenges which saw the Authority introduce new services in a record time of 100 days. Following less than three months from the proposed changes to legislation, the EPA drafted and published a new Protocol, which for the very first time has now become part of the Legislation. This Third edition of the Protocol included facilitating of the already existing services such as third-party donation for oocytes, the improvement of other services and also the introduction of the very sensitive service of Pre-Implantation Genetic Testing for Monogenic Diseases.

This year was another year in which the services of the clinics who offer ART Services were impacted by the aftermath of the COVID-19, with direct impact on the patients undergoing treatment as well as the work of the Embryo Protection Authority. The Authority has put in place a review process and requested clinics to submit a plan for the way forward in offering services, to ensure that plans were robust enough so that patients and clinics staff could be kept safe. The pandemic had a big impact on the Authority, whilst most of the public sector moved to work from home, our dedicated Staff were working extraordinarily long hours for weeks in a row, to suspend and ensure a safe reopening of the fertility sector; and to offer the much-needed support to patients through our helpline which was available 24/7.

During 2022 the Authority we also showed empathy by extending the maximum age of three women who were going to reach their maximum age of 43 years. This extension followed the two other extensions granted by the Authority during the pandemic so no one would miss the chance of undergoing fertility treatment and thus miss the chance of becoming a parent. The Authority issued a six-month extension to these women. With this measure more women were granted this extension to undergo procedures in both the private and public tissue establishments.

Through these struggles, 2022 was still another busy and successful year of daily miracles for the Embryo Protection Authority. We are proud that since our inception in 2013 to date **four hundred and seventy-six (476) babies** have been born through ART Technologies carried out in Malta. **Eighty-three (83)** of these babies were born from cryopreserved embryo cycles whilst another **five (5)** babies were born from the use of third-party identity release donor sperm, as a result of the amendments to the Embryo Protection Act in 2018 which were then implemented by the licenced clinics in the following years.

We are proud that this year the Take-Home Baby Rate is of **27.74%, resulting in a good increase of 7.12% over 2021 and a substantial increase of 12.30% over the 'Take-home Baby' Rate of 2020.**

As with previous years, the Authority was invited to raise awareness on the various media and take part in the public debates that arose on the subjects mainly on the implications of embryo freezing and embryo adoption as well as the introduction of direct and non-direct third-party donation. The most debated issue we were invited for on the media was definitely the introduction of the Pre-Implantation Genetic Testing for Monogenic Diseases which was legislated in July 2022.

During this year, and after the move to the new premises in late 2021, the Authority engaged more human resources. Current staff also successfully completed the training they were undergoing.

2022 also brought about the opening of a new Tissue Establishment in the private sector, offering more services to our patients and the option to choose between receiving the services at a public or a private facility.

Looking forward to 2023, which will see the introduction of third-party donations of oocytes from abroad thus opening the services to a wider range of patients. 2023 will also see the implementation of the PGTM which was legislated in 2022, to offer more high standard services to our prospective patients.

We will continue to strive to see that the many strides we have made in this sector, in the last ten years, will continue to flourish. We also promise that we will continue to be the voice of our patients by introducing a new Strategy for 2023-2026, which unfortunately had to be delayed due to the pandemic and the challenges brought about with changes in legislation. We will focus on what we want to achieve in this field and how we will work together with all stakeholders towards achieving it.

My special thanks go out to our very limited but very Supportive Staff at the Authority, who have proved to be the EPA's most valuable asset once again. The excellent results achieved in 2022 in a timely manner against very tight resources available, would not have been possible without their high degree of considerable personal commitment and flexibility.

Last but not least, thanks to all who have crossed our paths in the past ten years, looking forward with a positive attitude, as we eagerly await the birth of another **sixty-five (65) babies**, that we are happily expecting to be born in the coming months.

Ms Simone Attard

Chief Executive Officer

1. BACKGROUND

1.1. The Embryo Protection Authority (EPA)

The Embryo Protection Authority is a body corporate having a distinct legal personality and is the sole Independent Regulator of all Assisted Reproductive Technologies (ART) performed at both the public and private licensed clinics/hospitals in Malta. It has been established as per the Embryo Protection Act 2012, (Chapter 524) which covers the use and storage of sperm, oocytes (eggs), and embryos for human application.

The Act has been amended through the Embryo Protection (Amendment), 2018. The new Amendment Act was enacted on the 21st of June 2018 and came into force on the 1st of October 2018 as per Legal Notice LN 313/2019.

The latest amendments to the Embryo Protection Act, came into force on the 29th of July 2022, following the tabling and approval in Parliament of the 'Various Laws Relating to Assisted Procreation (Amendment) Act, 2022.

The Protocol for Additional Fertilisation Requests (AFR) was established in writing by the Authority compiling all criteria and methodology for the application to grant more than two (2) oocytes to be fertilised and consequently permission for embryo cryopreservation. The AFR Protocol was presented to the Parliamentary Health Committee on the 13th of September 2018 and was unanimously approved on same day.

This AFR Protocol was further updated in 2022 to include also Additional Fertilisation Requests for Pre-Implantation Genetic Testing for Monogenic Diseases (PGTM).

The Authority sets the standards and determines the policy framework (Protocol) while providing information to stakeholders, the general public, and to the prospective parent / parents seeking treatment.

At the Authority, we aim to ensure that everyone who receives treatment at a fertility clinic in Malta, and everyone born as a result of treatment undergone in Malta, receives high quality and high standard care with dignity and respect. We do this by regulating, monitoring, and inspecting fertility clinics and providing free, clear, and impartial guidance and information about fertility treatment, the clinics providing them, and oocyte, sperm, and embryo donation where applicable.

1.2. Our Principles – PATIENTS FIRST

The Embryo Protection Authority treats all prospective parent / parents referred by the licensed Clinics with dignity and respect, and all information provided to the Authority in confidence remains highly confidential and disclosed only in the circumstances permitted by law, as per the Data Protection Act.

All decisions taken by the Embryo Protection Authority are taken in the best interest of the prospective parent/parents and of the child/children who may be conceived out of any assisted reproductive technology procedure undertaken.

1.3. Our Principles – Working closely with Stakeholders

The Authority ensures that the highest levels of standards are being kept as specified in the laws governing the fertility sector by working closely with all stakeholders in the Fertility field.

The Authority also performs its functions consistently and fairly with all clinics as per the established Laws and Regulations.

1.4. The Legal Framework

A few laws and regulations make up the regulatory framework which covers the Assisted Reproductive Technology (ART) activities held in Malta.

1. *The 'Enabling' Act*:

The Embryo Protection Act 2012 – Chapter 524 of the Laws of Malta is the 'Parent' Act governing the Fertility Sector. The Bill was passed through Parliament and provides for the protection of human embryos through the establishment of the regulatory Authority (The Embryo Protection Authority).

2. *The 'Amended' Act:*

The Embryo Protection (Amendment) Act, 2018 of the laws of Malta is the amended 'parent' Act with the ultimate purpose to make all the regulated processes within the Fertility Sector, more accessible and equitable to all those who need them. This Amended Act amended the definition of prospective parent, allowed embryo cryopreservation and third-party donation.

3. *The 'Various Laws relating to Assisted Procreation' Act*

The Various Laws relating to Assisted Procreation (Amendment) Act, 2022 of the laws of Malta is the latest amended 'parent' Act with the ultimate purpose to introduce new services, make all the regulated processes within the Fertility Sector, more accessible and equitable to all those who need them. This Amended Act further enhanced third party donation, allowed Pre-Implantation Genetic Testing for Monogenic Diseases, and facilitated embryo adoption.

4.*The Regulations*:

The Embryo Protection Authority Regulations 2015 – (L.N.32 of 2015 – Chapter 524) have been published by Legal Notice 32/2015 following assent by the Parliamentary Secretary responsible for Health. It grants the Authority its legal personality and representation and outlines the executive administration and organisation of its affairs.

The Embryo Protection Authority (Amendment) Regulations 2020 have been published by Legal Notice 343/2020 and came into force on the 21st of August 2020 following the assent of the Minister responsible for Health with the concurrence of the Minister responsible for Justice. This has become a Subsidiary Legislation 524.01.

5. *The 'Protocol' and 'Additional Fertilisation Request Protocol'*

The Protocol which was published by the Authority in 2013 is intended as a means of assisting licensed Clinics to comply with their legal obligations whilst also serving as a useful reference for patients and professionals working in the fertility sector.

During 2018, work was performed to issue an amended Protocol to reflect the requirement changes stemming from the Embryo Protection (Amendment) Act, 2018. The Updated version of the Protocol was tabled in Parliament during 2019.

In July 2022, the third version of the Protocol was published as part of the changes to the legislation. This Protocol now also includes a dedicated section, as a Protocol for Pre-implantation Genetic Testing for Monogenic Diseases. The latest third edition of the Protocol was published through a Legal Notice and for the first time has become a Subsidiary Legislation bearing SL524.02.

The Protocol for Additional Fertilisation Requests (AFR) was established in writing by the Authority compiling all criteria and methodology for the application to grant more than two (2) oocytes to be fertilised with a set maximum of five (5) oocytes and consequently permission for embryo cryopreservation. The AFR Protocol was presented to the Parliamentary Health Committee on the 13th of September 2018 and was unanimously approved on same day. During 2022 tissue establishments making additional fertility requests had to strictly abide by this Protocol for their application to be approved by the Board.

This AFR Protocol was further updated in 2022 to include also Additional Fertilisation Requests for Pre-Implantation Genetic Testing for Monogenic Diseases (PGTM).

Professionals working in the fertility sector are also bound to follow Directive 2004/23/EC which sets standards for donation, procurement, testing, processing, preservation, storage, and distribution of human tissues and cells.

1.5. Functions of the EPA

- To ensure that high standards of ethics are maintained by all medical practitioners, paramedics, and other personnel involved in procedures of medically assisted procreation and gamete donation;

- To request and obtain, in cases of reasonable suspicion that the provisions of the Embryo Protection Act and any regulations made thereunder are not being followed, information and copies, in any form, of documents required by the Commission Directive 2004/23/EC of the European Parliament and of the Council of 31st of March 2004 on setting standards of quality and safety for the donation, procurement, testing, processing, preservation, storage, and distribution of human tissues and cells to ensure traceability of human cells;

- To carry out inspections in order to ensure that the standards of best practice are being respected and implemented and that all information and documentation required under Article 18 of the Embryo Protection Act and any regulations made thereunder is being kept appropriately, and for this purpose to access clinics and any other places as necessary;

- To maintain a statement of the general principles which, in its opinion, should be followed in:

  a. Carrying out its activities under the Embryo Protection Act; and
  b. Carrying out its functions in relation to such activities under the Embryo Protection Act.

- To ensure, in relation to activities under the Embryo Protection Act, compliance with:
  a. The obligations and requirements imposed by or under the Embryo Protection Act and any regulations made thereunder;
  b. The codes of practice established under paragraph (a) of the Embryo Protection Act.

- To determine the eligibility and suitability or otherwise of a prospective adoptive parent in terms of the Protocol in those cases where it may give for adoption the embryos in terms of the Embryo Protection Act and keep a register thereof.

- To keep a register of every medically assisted procreation procedure, germ line cell donation, cryopreservation of germ line cells, cryopreservation of embryos and embryo donation and adoption in terms of the Embryo Protection Act which shall in all cases remain confidential.

- To perform such other functions as may, from time to time, be prescribed by regulations made under the Embryo Protection Act.

- To establish and maintain a Protocol in writing, which shall consist of the Regulatory principles that shall be followed in carrying out its functions under the Embryo Protection Act.

1.6. Board Members and Executive Administration

The legal representation of the Authority is vested in its Chairman, Hon. Judge Emeritus Philip Sciberras UOM and the Chief Executive Officer, Ms Simone Attard RRCouns., PGrad Cert, PGrad Dip Systemic Practice (Tavistock and Portman NHS Trust UK)., MBICA., GHZ., OLJ.

The Embryo Protection Authority board is composed of Chairman Hon. Judge Emeritus Philip Sciberras UOM, Vice-Chairperson Ms. Josephine Abdilla MBA *Henley,* DIP Mang. *Henley.* The other appointed members include Dr. Patrick Sammut MD MRCPCH MSc., Ms. Mariella Meachen B. Psych (Hons) MA (Psychotherapy) R.N., Profs. Victor Grech MD PhD. PhD FRCPCH FRCP, and Ms. Sarah Camilleri Dip Economic and Political Studies.

Dr Patrick Sammut has offered his resignation in January 2020, however, to date he has not been replaced.

In exercise of the powers conferred by Article 6 (2) of the Embryo Protection Authority Regulations, 2015 (L.N. 32 of 2015), the Hon Minister for Health, after consultation with the Embryo Protection Authority had appointed Ms. Simone Attard RRCouns., PGrad Cert, PGrad Dip Systemic Practice (Tavistock and Portman NHS Trust UK)., MBICA., GHZ., OLJ., as Executive Director of the Embryo Protection Authority to serve for a second term of three years up to 31st January 2022. Following the publication of the Legal Notice 343/2020 Ms Simone Attard was appointed as Chief Executive Officer on the 21st of August 2020 to serve for a third term as Head of the Authority for three years up to 20th of August 2023.

Ms Moira Gialanze the Administrative Officer was appointed to also serve as the Authority Board's Secretary with effect from April 2019.

During 2022, twelve (12) Authority board meetings have been called and, in all sittings, quorum was achieved. All board meetings were held at the new Luqa Authority premises. All meetings were held with physical attendance but precautions to follow the COVID 19 measures were in place. Attendance of the board members and the CEO to these Board meetings were as stated hereunder:

Designation	**Name**	**Attended**	**Excused**
Chairperson	Judge Philip Sciberras	10	2
Vice Chairperson	Ms. Josephine Abdilla	12	0
Member	Dr. Patrick Sammut	0	0
Member	Profs. Victor Grech	6	6
Member	Ms. Mariella Meachen	12	0
Member	Ms. Sarah Camilleri	6	6
Chief Executive Officer	Ms. Simone Attard	12	0
Board Secretary	Ms. Moira Gialanze	10	2

During the twelve (12) meetings, two representatives from *the Obstetrics and Gynaecology Association* were invited to attend the meetings in order to discuss requests for the additional fertilization of oocytes. These requests are made by the clinicians treating the prospective parent / parents to the Embryo Protection Authority to approve the fertilization of a maximum of five oocytes instead of the two currently permitted by law up to July 2022 and a maximum of eight oocytes following the changes to legislation.

After the changes coming into effect on the 1st of October 2018 and the approval of the Additional Fertilisation Request Protocol by the Parliamentary Health Committee the two members of the Paediatric Association of Malta offered their resignation from attending to the Authority meetings, to date although several requests have been made by the Authority, the Association has not yet appointed other members to represent the Paediatrics Association on invitation of the Board.

1.7. Annual Remuneration to Board Members

The members of the Board are not fully employed by the Embryo Protection Authority but receive annual remuneration for their services, remuneration capping for 2022 in line with the new framework for the categorization, classification and remuneration of Boards and Committees stood as follows: Chairperson €13,945, Vice Chairperson €6,000, and members €5,176- respectively.

However, in line with good governance, board members were only paid for sessions they attended to, and if sessions were held in the mornings a vacation leave form from their full-time job had to be presented for payment to be affected. The remuneration for 2022 paid to each member is as listed overleaf.

Designation	Name	Annual Remuneration (Euros)
Chairperson	Judge Philip Sciberras	11,620.80
Vice Chairperson	Ms. Josephine Abdilla	6,000.00
Member	Dr. Patrick Sammut	0
Member	Profs. Victor Grech	2,587.80
Member	Ms. Mariella Meachen	5,175.60
Member	Ms. Sarah Camilleri	2,587.80

1.8. The Authority as a Regulator

As the sole regulator of all Assisted Reproductive Technologies (ART) performed at both public and private licensed clinics/hospitals in Malta, the Authority strives to ensure compliance with the obligations and requirements imposed by or under the Embryo Protection Act and Protocol.

During 2019, the issue of having two competent Authorities that the clinics must report to, was raised by one of the clinics. To iron out these misunderstandings a meeting was held between the licencing Authority (SPH) and the Regulator (EPA) together with their legal representatives as well as the Chief Medical Officer to put in writing the different roles of the Authorities as well as when and to whom the clinics must report to. Unfortunately, although this meeting was very fruitful and to this effect a letter was circulated to clinics with the defined roles and responsibilities and reporting obligations of each Authority, during 2022, there still were instances when one of the clinics did not adhere to the established agreement between both

Authorities and totally ignored the EPA as an Authority from which authorisation prior to procedure is to be sought. To this effect we are hereby again listing the separate roles and responsibilities of each Authority.

All reporting as regards to issuing of Licences and renewals of same, is to be made solely with the Licensing Authority, i.e., SPH. Same applies to quality and safety of general public health.

There are instances where the reporting is to be made by the Clinics to **both** Authorities simultaneously. Thus, reporting of serious adverse events (SAE) and serious adverse reaction events (SARE), as well as all quality and safety issues relating to quality and safety of gametes and embryos during processes and storage are to be reported to both SPH and EPA.

Alterations to premises and equipment are to be reported to **both Authorities.** Henceforth, all requests for permissions are to be submitted before the actual activities are embarked upon.

Reporting of activities that need to reach solely EPA, supported by EPA forms and documentation including testing results, should include but are not limited to:

- Request for permission to cryopreserve gametes in oncology cases
- Request for permission to cryopreserve gametes in fertility preservation
- Request for permission to cryopreserve gametes by transgender persons prior to starting hormone therapy treatment
- Request for permission to discard gametes
- Request for permission to transfer gametes/embryos between licenced centres in Malta

- Request for permission to transfer gametes/embryos from a Malta Centre to abroad and from abroad to a Malta Centre
- Request for ART Procedures (IUI, IVF, ICSI) as well as procedures making use of thaw and transfer of cryopreserved embryos and storage of gametes for patients undergoing an ART cycle
- Request for Additional Fertilisation of oocytes (up to a maximum of 5 oocytes) to be made in line with the EPA Protocol as approved by the Parliament Health Committee
- Request for Embryo Cryopreservation and potential Embryo Donation
- Request for Use of Third-Party Donation and duly inform immediately every donation made with full identity details of the donor.
- Prior Authorisation by the Authority for the donation of cryopreserved Embryos
- Prior Authorisation by the Authority of the Agreement between the prospective parent or prospective parents and the licensee to regulate the cryopreservation of embryos.
- Prior authorisation by the Authority to be granted to a prospective parent or prospective parents who had cryopreserved embryos in tissue establishments abroad to bring two cryopreserved embryos to be transferred locally into the prospective parent or prospective parents for each cycle
- Request for permission to undergo PGTM.
- Outcomes of all procedures and storage carried out.
- To provide the Authority with all documentation and data in regard to reporting obligation of the Authority to the House of Representatives

- To pass on information to the Authority without delay of all confidential registers held by the licensee with full details of every medically assisted procreation procedure, germ line cell donation, cryopreservation of germ line cells and cryopreservation of embryos.
- Any other documentation that the Authority as Regulator may request in terms of the Embryo Protection Act
- Payment of all procedure and storage fees

Breaches in reporting duties with regards to the EPA may lead to prosecution by the Authority in accordance with the Embryo Protection Act.

As Regulator, the Authority took an active role in the COVID 19 pandemic, and again, the Authority considered issuing an extension to the women who were to undergo treatment and were nearing reaching their maximum age. Thus so no one would miss the chance of undergoing fertility treatment and thus miss the chance of becoming a parent, the Authority issued a second six-month extension to the women who would be reaching the age of forty-three (43) by end of June 2021. With this measure more women were granted this extension to undergo procedures in both the private and public tissue establishments.

The Authority was also very much in touch with the Maltese Licenced clinics and was providing them with the latest news and updates from ESHRE, ECDC and other institutions on the experience of maintaining safe and sufficient supply of substances of human origin (SoHO) gained during the COVID-19 pandemic and through recent scientific developments in understanding the evolution of the disease. The documents provided reassess the risk posed by COVID-19 and revises management options for the safe and sustainable supply of SoHO. It also includes

information relating to the safety of staff in SoHO establishments and recipients of SoHO products. The aim of this active role by the Authority was to assist the tissue establishments in responding to the threat posed by the pandemic.

The Authority has proceeded with caution in its decisions to suspend or postpone treatments in order not to continue creating emotional suffering to those who had already started their treatment, in fact the Authority was offering counselling services to the patients through a special dedicated telephone line. The Authority also requested tissue establishments to forward their plan on how activities will continue after new measures were announced. It was agreed that all genetic, urology and counselling sessions are to be held online. Clinics were to stop new stimulations for IVF/ICSI and IUI's until new measures are announced. All other activities that did not need anaesthesia involvement were to continue.

During 2022, three further extensions were granted to three women due to medical reasons.

Throughout 2022, several requests of applications for fertilisation of oocytes for prospective parents undergoing cycles at the licensed clinics were reviewed. All the cases presented were discussed and decisions of approval or non-approval were unanimously taken accordingly. Also, several requests for sperm and oocyte retrieval and cryopreservation only were received by the Authority. These where approved or rejected subject to all virology tests being in order. Details of these approvals are given in detail in the second part of this Annual Report.

The Authority has received twenty-six (26) requests in 2022, which is more than three times the requests received in 2021 and six times more than the requests made in 2020, from the licensed clinics to grant permission for oocyte retrieval and cryopreservation only and or embryo cryopreservation for twenty-six (26) women aged between 18 and 45, who wanted to preserve their fertility.

Six permissions were granted to six (6) women on medical grounds who made this request prior to starting chemotherapy for oncology diagnosis. Four (4) of these women opted to cryopreserve oocytes only and not proceed with embryo cryopreservation. One other woman opted for embryo cryopreservation only, whilst one other woman abandoned the cycle after permission was granted. From the five (5) permissions granted a total of seventy-four (74) oocytes were collected, fifty-one (51) of which were cryopreserved, three embryos were also cryopreserved for later use at the MDH ART Clinic.

Another eleven (11) women, two at the MDH ART Clinic and nine at the HOPE Fertility and IVF Clinic, were granted approvals to cryopreserve their fertility on medical grounds not related to oncology, these patients opted for cryopreservation of oocytes.

For the very first time in the history of Assisted Procreation in Malta, the Authority received three requests from women who opted to preserve their fertility prior to donating their oocytes to their same sex female partner. This procedure known as **Reception of Oocytes from the Partner (ROPA)**, allows same-sex prospective parents to 'share motherhood'. This technique consists of an In Vitro Fertilization (IVF) procedure where one woman contributes with her oocytes and the other woman contributes with her uterus. All three approvals were granted.

Another two approvals were granted to two (2) females prior to starting the process to transitioning into a male, these patients opted for cryopreservation of oocytes.

The other four (4) women requested to cryopreserve their oocytes at the private facility HOPE Fertility and IVF for social freezing reasons, to use their oocytes at a later stage in life. All requests were approved.

Out of the twenty-six (26) approvals granted, seventeen (17) women had successful oocyte retrieval, collecting in total 152 oocytes. Four (4) women had abandoned the cycle after approval was granted, one (1) had no oocytes collected whilst another four (4), although approved in 2022 are still not yet done. From the seventeen (17) women who had a successful oocyte retrieval, sixteen (16) had successful oocyte cryopreservation, cryopreserving a total of 115 oocytes and one woman successfully cryopreserved three embryos for future use.

The Authority also received a total of one hundred and fifteen (115) requests from the licenced tissue establishments to grant permission for sperm cryopreservation, 108 at MDH ART Clinic and 7 at the new private clinic HOPE Fertility and IVF. All 115 requests were granted permission to cryopreservation of sperm. In several cases, sperm was obtained through eleven (11) testicular aspiration/extraction (TESA/TESE).

The 115 requests were made for males aged between 17 years and 56 years. One hundred and three (103) males vitrified their sperm, whilst twelve (12) males who requested sperm cryopreservation did not vitrify sperm.

Twenty (20) requests were made by males, aged between 17 years and 48 years requesting Fertility preservation following oncology diagnosis prior to starting chemotherapy.

Another six (6) males aged between 17 years and 29 years made requests for cryopreservation of sperm prior to starting to receive hormone therapy to transition from male to female.

The other eighty-nine (89) requests, an increase of 35 requests over previous year were made by males aged between 21 years and 56 years who had Urology referrals with the main reason for referral being decrease in male fertility parameters and azoospermia.

In 2022, the Authority received a request for the transfer of cryopreserved embryos from a Malta Tissue Establishment to Spain. The patient had cryopreserved these embryos at the St James Conception Unit and had decided to continue with treatment abroad. The Authority recommended to the Superintendent of Public Health to issue an on-off distribution approval on named patient bases so this transfer could be affected. Once approval was granted from the SPH, the Authority approved the movement of the cryopreserved embryos to be cryopreserved abroad. Eventually two cryopreserved embryos were distributed (exported) to Spain in 2022.

In the first quarter of 2022, the Authority also received two requests for the transfer of cryopreserved embryos from the Cyprus to Malta. The Maltese patients had cryopreserved these embryos after the coming into force of the changes to the

Embryo Protection Act of 2018 and thus were not eligible to transfer these embryos to Malta, as the Embryo Protection Amendment Act of 2018, required that any embryos to be imported / distributed to Malta had to be cryopreserved prior to the 1st of October of 2018. Thus, both requests were rejected by the Authority Board.

In the last quarter of 2022, the Authority also received a further request for the transfer of cryopreserved embryos from Cyprus to Malta. The Maltese patient had cryopreserved these embryos abroad after 1st October 2018 so with the changes brought about in the Embryo Protection Act in July 2022, patient could request to transfer the embryos to Malta. On a due diligence exercise done on the cryopreservation of these embryos it was noted that the necessary virology tests requested by both the National Legislation as well as the EU legislation were not fully followed up by the foreign tissue establishment. Thus, this request was rejected by the Authority Board on the grounds of quality and safety.

In 2022, the Authority also received one further request for the transfer of cryopreserved gametes, two vials of sperm, from the United Kingdom to Malta. The Authority issued, a one-off approval for the movement of the cryopreserved gametes after obtaining clearance from the Superintendence of Public Health. This approval was granted for vials to be cryopreserved in the private clinic HOPE Fertility and IVF in Malta.

In the last quarter of 2021, the Authority received a request from a patient to transfer her cryopreserved oocytes from the private local clinic St James Conception Unit to a clinic in Spain. The Authority requested the local clinic to establish the necessary documentation for the distribution of gametes to another country for which an

approval will be issued once all documentation is in place. The necessary documentation was established in the first quarter of 2022 and a one-off approval for the movement of the cryopreserved gametes after obtaining clearance from the Superintendence of Public Health. In March 2022 two oocytes were distributed from St James Conception unit to Spain.

In the last quarter of 2022, the Authority received a request from a patient to transfer her cryopreserved oocytes from the public local clinic, MDH ART Clinic to a clinic in Spain. The Authority issued a one-off approval for the movement of the two cryopreserved oocytes after obtaining clearance from the Superintendence of Public Health. This movement was not yet completed by end of 2022 and was envisaged to take place in the first quarter of 2023.

In 2022, after the establishing of a third-party agreement for the distribution of donor third party sperm from abroad, a country within the European Union, by the MDH ART Clinic, the Authority received nine (9) requests for the transfer of donor sperm to Malta. All nine (9) requests were approved by the Authority; however, one of the requests had to be rejected after approval as the sperm donor had reached his worldwide pregnancy limit. In 2022, the distribution of a total of thirty-two (32) donor sperm vials had been cryopreserved in the public tissue establishment to be used in procedures requiring the use of third-party donor sperm. 11 vials of donor sperm from three donors were also sent back to the foreign sperm bank from the MDH ART Clinic after receiving notification from the foreign tissue establishment not to be used in Malta.

2022, also brought about the introduction for the very first time of donor procedures in the private sector. The granting of a licence to HOPE Fertility and IVF after the establishing of a third-party agreement for the distribution of donor third party sperm from abroad, a country within the European Union saw the first requests for the movement of donor third party sperm to the private sector. The Authority received fifteen (15) requests for the transfer of donor sperm to the Malta private facility HOPE Fertility and IVF. Twelve (12) requests were approved by the Authority; and three of the requests had to be rejected as the sperm donor had exceeded the maximum age limit as allowed in the Maltese Legislation. In 2022, the distribution of a total of twelve (12) donor sperm vials had been cryopreserved in the private tissue establishment to be used in procedures requiring the use of third-party donor sperm.

During 2022, the Authority also received requests for transfer of gametes and embryos between the Maltese Licenced Tissue establishments for cryopreservation, namely MDH ART Clinic, St James Conception Unit and HOPE Fertility and IVF.

Two (2) requests were received for the transfer of embryos from the MDH ART Clinic to the HOPE Fertility and IVF clinic. The Authority approved both requests for embryo movement and a total of six (6) embryos were shifted from the public to the private clinic.

Another two (2) requests for transfer of gametes were received by the Authority to transfer sperm between the Maltese Licenced Clinics. One of the requests was to transfer gametes from the St James Conception Unit to the MDH. ART Clinic. The other was to transfer sperm from MDH ART Clinic to HOPE Fertility and IVF.

The Authority approved both requests which included the transfer of thirteen (13) vials of sperm of two males.

Another three (3) requests for transfer of gametes were received by the Authority to transfer oocytes between the Maltese Licenced Clinics. One of the requests was to transfer gametes from the St James Conception Unit to the MDH. ART Clinic. The other two requests were to transfer oocytes from St James Conception Unit to HOPE Fertility and IVF. The Authority approved all three requests which included the transfer of eighteen (18) oocytes of three females.

1.9. Human Resources

During 2022, to further strengthen its corporate structure, the Authority engaged in issuing calls to fill the vacated post of Assistant Director, after several interviews were held the post was finally filled up.

The Authority structure has been amended to also include the position of Managers which although several interviews were held the post was still not filled up till the end of the year. We are hopeful that in 2023 these posts will be filled.

New positions of Clerks, Administrative Officers and Senior Executive were amended and filled during 2022. The total number of employees directly employed with the Authority now stands at nine (9) employees, two (2) other employees are on secondment with the Authority, whilst another one (1) is detailed with the Authority from the Public Service.

1.9.1 Training of Staff

The Authority strives to ensure that its employees have the skills and competences to match the organizational requirements to guarantee optimal executive performance. All the staff receive regular training throughout the year including training for the wellbeing of the staff themselves. Staff also attend for sessions on Online Awareness Session on Health Relationship and Practical Skills for Managing Stress organised by the People Support and Well Being Directorate. All new staff underwent training in General Data Protection Regulation (GDPR). Other employees attended, training courses on Accountability and Good Governance as well as. Staff also received detailed training in Risk Management, Quality Management, and specific training in the ART Field.

At the Authority, our patients are very dear to our hearts, thus patients who have received bad news or diagnosis need special care. In 2022 the Authority chose to again participate in the training offered by the Positive Parenting Taskforce set to implement the Positive Parenting Strategy for the Maltese Islands. The breaking bad news sessions focused on several different situations and focused on 'Understanding and being sensitive to the needs of parents of young children when receiving negative news and/or diagnoses' it also gave insight on 'Breaking the news prior to birth when there is a disability or a condition incompatible with life'. The themes of 'Acknowledging the needs of parents with disability when accessing treatment' as well as 'Working with the context in the aftermath of bad news breakup: liaising with services, community and peers to sustain inclusion for all' were also explored.

With the ongoing changes to the Maltese population, which brings about the contact of prospective parents from different cultures and religions. Training was also given

in the form of online attendance to International webinars, mostly offered by the European Society for Human Reproduction and Embryology (ESHRE). The themes of 'Medical Assisted Reproduction and Religion', 'Polyparenthood' which focused on different types of new family formations, as well as 'Female Genital Mutation and Infertility' were explored.

In the first quarter of 2022, the Chief Executive Officer attended a Campus Symposium online on 'The case for and against Mitochondrial replacement techniques.' This Symposium was organised by the European Society for Human Reproduction and Embryology (ESHRE) and was attended virtually.

EPA staff also attended for a very informative and thought-provoking session on 'Ethics decisions to be made in an ethical boundary work in infertility clinics'. This training was held virtually online.

Two other training workshops were attended virtually by EPA staff, these focused on 'Rights and Duties on donor conception' and 'Everyday ethics in patient centred Fertility care with donor oocytes.' Both workshops were organised by the European Society for Human Reproduction and Embryology (ESHRE).

Between September and November 2022, the Council of Europe in Strasbourg through the European Directorate for the Quality of Medicines and Healthcare (EDQM) organised the 'Quality Management for Tissue Establishments'. This course was attended virtually by the Authority staff who participated in the live sessions held.

EPA officials also attended informative sessions organised by the Superintendence of Public Health in 2022 on 'Establishing a National Platform to address Social Determinants of Health – Health in all policies.'

1.9.2 Staff Wellbeing and Team building

At EPA, we highly believe in our staff, who are the backbone of the Authority, we also believe that the physical and mental wellbeing of our employees play an important part in the success of our Authority.

As an Authority, we have offered flexibility in the working hours of our employees, whilst all employees follow a 40-hour week spread over five days, some opt to start earlier and leave earlier whilst others start later in the day and leave at later hours. This has brought an advantage to both the staff and the Authority as the staff enjoy more family-friendly measures, while the opening times of the offices have been extended to more than ten (10) hours each day.

We also believe in strengthening the team building and bonding of our employees. Prior to Covid 19, we had made it a must that once a month, the employees together with Management meet once a month out of working hours and out of the offices for some social interaction. During Covid 19, these were still held but not so regularly and were held either online or in the office. As of this year 2022, we have again started the team building activities and not only celebrate any achievements of the Authority, but these activities serve to interact, help the staff understand the different cultures or our employees and give also feedback to management.

In one of the feedback items received in 2022 during one of the team building sessions, it was pointed out that employees had missed these staff interactions and were looking forward that we will start doing them more regularly. We promise that now that social life activities are returning to normal, we will start holding these teambuilding activities more regularly.

1.10. EU Competent Authority Meetings, Conferences, and other International Meetings

1.10.1 EU Competent Authority Meetings

In January 2022, the Embryo Protection Authority as the Maltese Competent Authority on Medical Assisted Reproduction (MAR) was invited to attend to a meeting on the EU Health Programme. During this meeting The EU4Health Work programme for 2022 was discussed and adopted to be published later in the year. This health programme included also issues and actions on Substances of Human Origin.

This Joint Action is to follow-up, pilot, and take-up the GAPP (Facilitatin**G** the **A**uthorisation of **P**reparation **P**rocesses) approach in the EU national competent authorities, with direct grants to Member States' authorities: piloting a new model approach for assessing and authorising novel Blood, Tissues, and Cells (BTC) preparation processes.

This high-level event brought together 24 beneficiaries, from 16 EU Member States and 2 non-EU countries, from EU Institutions, Blood, Tissues And Cells Competent Authorities Tissue Establishments, scientific societies and accreditation bodies, healthcare professionals. Experts in the field and representatives from patient and donor organisations, have also been invited to take part to the event as relevant stakeholders.

Day one of the event provided an overview of the work carried out at the EU level. Day two looked into bridging the gap between science and effective policies. On day two, participants also took a closer look at governance, the current state-of-play, and the next steps. The final objective is the implementation of policy on Blood, Tissues And Cells to ensure EU-wide safety for patients and donors, as well as a high quality of Blood, Tissues And Cells treatments.

In June 2022, the CEO of the Authority attended a meeting held virtually for the EU Competent Authorities on Substances of Human Origin Expert Group which was convened mainly to discuss the revision of the Blood, Tissue, and Cells Regulation. The meeting was attended by officials of Authorities in Member States as well as the representatives of the European Centre for Disease Prevention and Control (ECDC), the World Health Organisation (WHO), the Council of Europe, The European Directorate for the Quality of Medicines and Healthcare (EDQM) and Heads of Medicine Agencies (HMA).

The meeting focused mainly on the state of play of the Blood, Tissues, and Cells legislation revision. This legislation revision will repeal two directives and introduce a new legal framework which will include all the safety and quality guidelines for recipients, donors, and offspring. After almost 20 years in place, the current EU legislation no longer addresses the scientific and technical state of the art and needs to be updated to consider developments that have taken place in the sector, this will also include the developments in the Medical Assisted Reproduction field.

The meeting also discussed the pharma revision process and plans and other projects such as the New SoHO Joint Action – follow-up, pilot, and take-up the GAPP approach by national authorities, upcoming procurements under EU4Health (including service contract on management of SoHO within the hospitals) and the new EU4HEALTH new project "EGALITE".

The European Centre for Disease Prevention and Control (ECDC) updated the participants on the update on communicable diseases and introduction to the Network for the Microbial Safety of Substances of Human Origin (SoHONet).

Another main point on the Agenda was the discussion by the European Directorate for the Quality of Medicines and Healthcare (EDQM) which updated on the recent activities and the introduction to the new 'Emira' tool and post-mortem testing activity. Other items discussed during the meeting included the HPC collection kit supply issues, patients in need of a transplant and SARE web reporting.

In October 2022, the Authority attended a regular joint meeting held virtually for the EU Competent Authorities on Substances of Human Origin Expert Groups on Blood and Blood Components, Tissues and Cells, and Organs which was convened

to discuss the issue of Regulating for Sufficiency – tissues and cells. The meeting was attended by officials of Authorities in member States as well as the representatives of the European Centre for Disease Prevention and Control (ECDC) and the Council of Europe (EDQM), World Health Organisation (WHO) and the European Medicines Authority.

Present also for the meeting were key tissue and cell professional stakeholders. The meeting included discussions on legislative changes being proposed and how this change will support Member States in implementing and safeguarding more their regulatory function. This includes the introduction of regulatory functions for new activities which to date are not yet licenced and regulated. During this meeting, the Member States also discussed the Keeping of technical rules up to date, Protecting donors and children born from gamete and embryo donors and facilitating access to innovative Blood, Tissues and Cells that are safe and effective.

Participants also discussed the Presentations of other EU-funded activities as well as updates from the representative of EMA, ECDC, Council of Europe EDQM and WHO.

1.10.2 EU Substances of Human Origin – Vigilance Expert Subgroup (VES)

We are pleased to announce, that the Embryo Protection Authority's CEO, Mrs Simone Attard has been nominated and appointed to sit on the EU SOHO Vigilance Expert Subgroup. This nomination came after Mrs Attard successfully completed the first ever training offered by the Council of Europe, European Directorate for

Quality of Medicines, and Healthcare (EDQM) on 'Biovigilance for Tissues and Cells'.

This expert subgroup was created to put together the Member States experts in vigilance with the purpose of exchanging information, ways of working and implementing Legislation in a harmonised approach. The subgroup operates in compliance with the terms of reference and rules of procedure of the Competent Authorities on Substances of Human Origin Expert Group and the Commission's horizontal rules on expert groups ('the horizontal rules').

The primary objectives of VES are to provide technical expertise, to formulate advise to the Directorate-General for Health and Food Safety (DG SANTE) / Unit Medical Products: Quality Safety and Innovation. This subgroup is also tasked to facilitate the conduct of the annual reporting by the EU countries on serious adverse reactions or events (SARE) associated with Blood, Tissues And Cells, to facilitate the improvement of the common approach for definition of reportable SARE and the analysis and publication by the Commission of annual summaries of aggregated data from the EU countries reports.

VES provides a forum for sharing national expertise and experiences of vigilance in that field. It can suggest improvements to DG SANTE work with the Council of Europe's European Directorate for the Quality of Medicines & Healthcare (EDQM), contracted to perform the annual data collection, compilation and analyses of national serious adverse reactions or events data.

This subgroup also represents a forum for the exchange of information and experiences between the different EU countries regarding the rapid alert systems hosted by the European Commission. The alert platforms RAB and RATC provide an effective and secure tool for immediate exchange of information considered to have a safety or quality impact in two or more EU countries. These platforms are used to share information related to specific incidents and to facilitate appropriate actions to mitigate risk at EU countries level.

The Authority CEO attended the first meeting held virtually in December 2022 of the Vigilance Expert Subgroup (VES) of the National Competent authorities for blood, tissues and cells and organs Expert group. Present for this meeting were 54 members from National Competent Authorities, including representatives of DG SANTE and EDQM.

The Commission team welcomed the Vigilance Expert Subgroup members and mentioned the strengthening of the group by new members, nominated to represent the Competent Authorities for Blood, Tissues and Cells, and Organ sand stressed the importance of the VES members' active participation ensuring broad input in the different working subgroups.

In 2022, an annual work plan was adopted. Most of the VES's work takes place in its working subgroups which at present are: SARE reporting improvement, RAB/RATC, VES-IES collaboration, Organs.

During the meeting several isues were discussed amongst which were the Proposed SoHO regulation update. An EDQM general update in which it was discussed how VES input and collaboration will be sought for a new project aimed at strengthening

biovigilance systems and best practices for building up and maintaining effective and efficient biovigilance programmes. Preparation of 2023 reporting exercise and action plan for future reporting improvements. The new EU SoHO platform was also discussed, this platform will be built with an initial focus on the essential. Authorities can remain in control and decide whether they will use/build applications at national level or make use of functionalities in the platform.

Other matters such as a Subgroup for cross-fertilisation with the Inspections Expert Subgroup (IES). Pilot of blood donor adverse reaction seriousness assessment tool. The meeting ended with a discussion on the SARE reporting of organs in 2022.

1.10.3 Other International Conferences

In January 2022, the Authority was invited to attend the Fusion 2022 Virtual Conference. The Fusion 2022 conference is the first joint ESHRE, IFS and ISAR International Conference on Reproductive Medicine and ART.

The conference, took place from the 4th to 6th February 2022, and included pre-congress workshops, plenary sessions, focused scientific talks, and panel discussions, with a large number of international experts, scientific leaders, and pioneers in ART.
In May 2022, EPA was represented by Mrs Attard who attended virtually the British Infertility Counselling Association (BICA) annual conference. During the conference discussions were held on the challenges and developments in patient support during the pandemic, moving forward to adoption of embryos, The

Longed-for Child: Pregnancy and parenting after fertility trauma. The issue on how Perinatal Mental Health Services care for women does who have fertility treatment was also discussed. This annual conference also dedicated a section of how infertility affects men and the Societal Impotence of Unheard Voices and Unnoticed Lives: Men and male childlessness. The conference closed off with a very interesting talk on Infertility Amnesia and the cold shoulder of childlessness with a live experience on the lonely experience of childlessness after infertility.

In May 2022, the Authority was invited to attend virtually to an International Conference on Bioethics entitled, 'Bioethics and the paradox of appearances: fragility, dependence, disability in the various stages of life'. This conference brought around 50 speakers from Italy, Switzerland, Malta, Morocco, Chile, Brazil, Mexico, and Canada together to discuss this important topic. The topics of embryo adoption, embryo cryopreservation and embryo testing were also discussed.

In July 2022, officials of the Authority virtually attended for the European Society for Human Reproduction and Embryology (ESHRE) 38th Annual General Meeting held online, including a Pre-Congress Course. The Pre-Congress course focused entirely on Ethics in In-Vitro Fertilisation. The following three-day conference included a scientific programme on various topics ranging from pre-implantation genetic testing, psychosocial support to prospective parents and donors, and the new technologies trends in oocyte donation and embryo freezing as well as add-ons to assisted reproduction techniques.

1.10.4 Other Local Conference and Seminars

During 2022, the Authority was also requested to give its feedback regarding the launch of the Transgender Medical Services and to assist the transgender clinic in any clarifications they may require. An online meeting was held with the transgender clinic on way forward. This issue was being brought to the attention of the Authority as prior to transgender persons starting hormone therapy, a request will be made to EPA Authority to authorise cryopreservation of gametes to preserve fertility.

The Chief Executive Officer attended several meetings and gave constructive input on the subject. This contribution was acknowledged by the 'Sexual Orientation, Gender Identity, Gender Expression and Sex Characteristics' (SOGIGESC) Unit within the Human Rights and Integration Directorate, during their Annual Conference. This was also highlighted in the LGBTIQ Equality Strategy and Action Plan 2019 - 2022 Annual Report for September 2021 to September 2022 wherein it was mentioned that the EPA Authority had revised its protocol in line with SOGIGESC. Mrs Attard was also invited to attend to the Consultation Meeting on the Malta Third National Strategy on LGBTQ Equality. In 2022, several enquires were made to the Authority for cryopreservation of gametes prior to transitioning process and receiving of hormone therapy.

During the Pride Week of 2022, the Authority was invited to deliver a seminar to the Malta LGBTIQ Rights Movement. Mrs Attard, the Chief Executive Officer of the Authority delivered this seminar entitled 'Pathway to Parenthood' wherein the recent changes to legislation were explained and the access to new services such as ROPA by the LGBIQ community.

The Embryo Protection Authority, through its Chief Executive Officer, during 2022 also attended to meetings organised between the Ministry for Health and the Ministry for the Family and Social Solidarity and the Ministry for Social Dialogue, Consumer Affairs and Civil Liberties, regarding the implementation of Policies on the Rights of the Child. During these meetings the Additional Protocols of the Oviedo Convention were also discussed amongst which those concerning the Protection of Human Rights and Dignity.

One of the functions of the EPA is to see that all prospective parents receive clinical counselling. During 2022, the Chief Executive Officer, who is also a warranted Infertility Counsellor, was invited to give several sessions and information to Maltese Counsellors, family therapists and other professionals working in the family field. These seminars included discussions about the recent changes in the Embryo Protection Act and the importance of implications counselling that now needs to be offered to all accessing treatment as well as the provision of genetic counselling to patients who will be undergoing treatment with PGTM.

The Authority was also invited to attend to the conference for the launch of the National Health System Strategy Seminar organised by the Ministry of Health in September 2022, wherein several presentations and parallel workshops were held.

In October 2022 the Authority also attended to the launch of the Health Workforce Strategy (2022-2030) for the Ministry for Health held at Muza in Valletta.

1.11. Embryo Adoption

Pursuant to the Introduction of the new concept of Embryo adoption the Authority started discussions together with the Social Care Standards Authority (SCSA), to start working on the standards and protocols to regulate this procedure. However, during said meetings and during the National Adoption Conference organised by SCSA to which the Authority was invited to attend, it was made very clear that the remit of the Adoptions Administration Act Board was solely on born children to be adopted and not embryos. Moreover, there are divergencies in the laws of both Authorities, as while the adopted embryo will be automatically recognised as the child of the prospective parents, prospective adoptive parents of children adopted would have to make a court request. A meeting was also held with representatives of the Foundation for Social Welfare Services to explain to them the provisions of the law.

Several meetings were held with the Social Care Standards Authority (SCSA) and the office of the State Advocate on this issue of embryo adoption, it was agreed that a bill is presented to Parliament that will amend the current Adoption Administration Act to provide the necessary legal framework to facilitate embryo adoption.

The main change to the principal Act, Chapter 495 is that the Adoption Administration Board will make recommendations to the Embryo Protection Authority regarding the eligibility and suitability of prospective parent or parents relative to adoption of an embryo as provided in sub-article (3) of article 4 of the Embryo Protection Act.

This bill had been reviewed by the Legislation Unit of the Ministry for Justice, Equality and Governance and was presented for Parliament approval on same day as the Changes to the Various Laws of Assisted Procreation. The Legal Notice was published on the 29th of July 2022.

On the 7th of April of 2022, the Authority received notification through a letter signed by both prospective parent and her partner, that they do not have the intention to use the four embryos that they had cryopreserved at the MDH ART Clinic in 2019, as the couple had ended their relationship and informed that these embryos can now be given up for adoption.

As per Chapter 524 of the laws of Malta, on immediate notification the embryos custodianship passes over from the prospective parents onto the Authority, so these embryos could be given up for adoption.

Meetings are still underway, with the State Advocate Office and the SCSA as the current licenses held by the local Adoption Agencies both public and private do not cater for embryo adoption. Although this issue is beyond the control of the EPA Authority, we are in constant contact with the State Advocate Office lawyers to solve this issue and these four embryos can be given up for adoption. Meanwhile these embryos will remain cryopreserved at the MDH ART Clinic until a legal solution is found.

1.12. Special Leave for Medically Assisted Procreation

The Embryo Protection Authority, through its Chief Executive Officer, during 2021 and 2022 was also in continuous discussion with the Ministry for the Family and Social Solidarity and the Ministry for Social Dialogue, Consumer Affairs and Civil Liberties, to update the Legal Notice that was issued on the 31st of May 2017, granting Special Leave for Medically Assisted Procreation to now be in line with the New Amendment Act. Amendments were necessary to now include also single women and same-sex prospective parents and donors of oocytes.

The changes came into force by Legal Notice 263/2020. These changes were further enhanced and now also included in the Public Service Manual and all applications for leave are being approved in line with these legal notices.

During 2022, the Authority received and approved a total of thirty-two (32) applications from prospective parents that were undergoing treatment in Malta at both the public and private Tissue Establishments as well as for those patients undergoing treatment abroad.

The Authority takes note that there is still a slow and low take up of this Special Leave, this is mainly due that some of the prospective parents are still not willing to inform their employers that they will be undergoing treatment, and so opt out of availing themselves of this special leave and instead make use of their own vacation leave or sick leave entitlement. As Regulator, we will continue to strive to see how we can better this take up of this much needed special leave.

1.13. Refund of Medication for Medically Assisted Procreation procedures carried out on the NHS

On the 17th of February 2022, the Authority was invited to attend to a Press Conference given by the Deputy Prime Minister and Minister for Health Hon Chris Fearne and the Chief Medical Officer Mr Walter Busuttil, wherein it was announced that Government will be refunding medication expenses in connection with the Assisted Procreation Procedures carried out on the NHS. During this press conference it was also announced that the EPA Authority, as Regulator of the Field will be approving these refunds applications and confirm that the necessary approvals were issued to the prospective parent/s to undergo the procedure at MDH ART Clinic. It was also announced that the refund of medication will be given retrospectively to the prospective patients who had undergone IUI, IVF/ICSI or embryo transfer with effect from 1st January 2022. A fixed refund sum was established for each category of procedures, but the government also pledged that anyone whose circumstance required more medication and thus exceeded the fixed refundable sum will be paid the difference on presentation of the necessary documentation.

To date the Authority has approved a total of two hundred and forty-eight (248) applications which include nineteen (19) for Intra-uterine inseminations (IUI's), eighty-nine (89) for cryopreserved embryo transfers and another one hundred and forty (140) applications for IVF/ICSI procedures. In regard to monetary value of these refunds, a total of €12,888.75- were refunded for IUI procedures, a total of €92,056.49- were refunded for embryo transfer procedures and a total of €353,589.00- were refunded for IVF/ICSI procedures. Thus, as of the 1st of January 2022, the Government has refunded the Grand Total of **€458,534.44-** to prospective parents undergoing Assisted Procreation Treatments.

1.14. Changes to the Embryo Protection Act and introduction of New Services.

The Embryo Protection Act's aim is to regulate the procedures relating to medically assisted procreation, to provide for the protection of human embryos and other ancillary matters. The Act was enacted by means of Act XXI of 2012 and came into force on the 1st of January 2013 by means of Legal Notice 455 of 2012. In view of the technological advances in this area and the enactment of the Civil Unions Act (Chapter 530 of the Laws of Malta) and the amendments effected to the Marriage Act (Chapter 255 of the Laws of Malta), the Embryo Protection Act was further amended to include third party donation and embryo cryopreservation in 2018.

The bill entitled 'Various Laws Relating To Assisted Procreation (Amendment) Act, 2022', with recommendations for further amendments to The Embryo Protection Act, was presented in a record of hundred (100) days by the Deputy Prime Minister to Parliament for discussion includes the necessary legal framework to facilitate gamete donation distribution/importation from abroad, introduce Pre-Implantation Genetic Diagnosis for Monogenic/single gene defects in embryos (embryo testing) and cryopreservation of embryos for medical reasons.

The proposed Bill also includes amendments to give more access to patients to become Parents as well as to provide the necessary legal framework to facilitate embryo adoption to prospective parents

On the 9th of May 2022, Deputy Prime Minister and Minister for Health Hon. Chris Fearne presented the Proposed Bill for amendments to the EPA Act for first reading

in Parliament. As pledged, this was presented within 100 days, and was presented in the second sitting of the Fourteenth Legislature. This was the culmination of extensive fieldwork and input by the Authority's Chief Executive Officer, Ms. Simone Attard, as expert in the field. Her input was continuously throughout the Second reading in Parliament attending to all three sessions held in Plenary on the 8th, 13th, and 15th of June 2022.

During the Committee Stage Mrs Attard answered to questions raised by members of Parliament sitting on the Committee as well as queries made by stakeholders and the general public that were allowed to intervene at this stage of Parliamentary discussion which was held on the 27th of June 2022. Mrs Attard also had meetings with the Chairperson of the Parliamentary Health Committee the Hon. Malcolm Paul Agius Galea, to discuss and explain the changes that will be made to the Authority Protocol, especially the changes to Additional Fertilisations Protocol and the Introduction of a new Protocol for PGTM.

The amendments being presented in the Bill cover the following areas: Gamete donation with an Amendment to the definition of donor, wherein 'the person related by affinity in the direct line' will no longer be excluded. Donations by an ascendant to a descendant; descendant to an ascendant; siblings whether of the full or half-blood; shall remain not be permissible. Donor age as defined in current Act is that donor should not have attained the age of thirty-six (36), an amendment is being suggested that this is substituted by 'age of thirty-six (36) on date of donation'. This will help the facilitation of obtaining donor oocytes and mostly sperm that have been cryopreserved for years when the donor was still much younger.

Oocyte donation to date although allowed in the EPA Act is still not licenced in Malta for third party identity release donors, Known local donors' procedure is licenced in both MDH ART Clinic and HOPE Fertility and IVF Clinic. This difficulty has arisen as while the sperm banks allow for the release and distribution to the Maltese EPA Authority the identifying information of the donor, oocyte banks in other EU countries such will only provide for a code to be distributed to the Maltese EPA Authority. Thus, the wording 'identifying information' in this Bill is being proposed to be changed to 'records traceable to the identity of the donor'. Moreover, as these countries do not hold identifying information for 110 years as specified in the EPA Act, this is being proposed to be reduced to 65 years.

The amendment allows for cryo-preservation of embryos for medical reasons in cases where these are diagnosed following PGTM. This amendment will allow the Authority to authorize new treatments to patients who have embryos cryopreserved due to PGTM diagnosis.

Another amendment being proposed is to increase the number of oocytes to be fertilized. The number of cells to be fertilized is to follow the Protocol established in writing by the Embryo Protection Authority. Current legislation allows for the attempt to fertilize two (2) oocytes in each cycle with the Authority granting permission to fertilize five (5) oocytes in specific cases as per Additional Fertilisation Protocol which is to be prepared by the Authority and approved by the Parliamentary Health Committee. Proposal is being made to amend this clause in the Bill to read for the provision for fertilization maximum of five (5) oocytes will be deleted and this is substituted by Maximum amount as authorized by the Authority, in the Act.

The Authority following internal discussions had envisaged to change this Article in its Protocol to read: Women who have not attained age 39 can be granted up to a maximum of five (5) oocytes, Women aged 39 up to 45 years can be granted up to a maximum of eight (8) oocytes. Prospective parents where the woman has not attained thirty-six (36) years of age will be allowed up to a maximum of eight (8) oocytes/embryos to undergo PGTM. Prospective parents where the woman has attained thirty-six (36) years and have not attained forty-six (46) years of age will be allowed up to a maximum of twelve (12) oocytes/embryos to undergo PGTM. No permissions will be granted by the Authority that will exceed the Maximum capping of twelve (12) oocytes.

The Proposed Bill allows for the introduction of PGTM. Pre-Implantation Genetic Diagnosis (PGT formerly known as PGD) of embryos As of 2017, the International Committee for Monitoring of Assisted Reproductive Technology (ICMART) revised the terms of PGD and new definitions were adopted. These now comprise of PGT for monogenic/single gene defects (PGTM) for monogenic diseases/ inheriting of disease. PGTSR for chromosomal structural rearrangements leading to disabling rather than life threatening disorders (down's syndrome and autism cases). PGTA for aneuploidies used for the general screening of all embryos irrespective if there is a disease in the family, PGTT used by families in need of a stem cell transfusion to treat a serious medical condition to ensure that they have a child that can act as a donor 'saviour sibling'. The amendments being presented in this bill propose the introduction of PGTM in the EPA Protocol.

Embryo Adoption amendments have also been proposed in this Bill to facilitate embryo adoption. Consequential Amendments to the Adoption Administration Act, Chapter 495 are being recommended to facilitate the legal framework of adoption of embryos by prospective Parent. Thus, the Adoption Administration Act

shall be amended to enable the Adoption Administration Board to make recommendations to the Embryo Protection Authority regarding the eligibility and suitability of prospective parent or parents relative to adoption of an embryo as provided in sub-article (4) of article 4 of the Embryo Protection Act.

The third reading of the Act was presented in Plenary on the 6th of July 2022 and was voted favourable by nearly all members of Parliament. It was signed by the Office of the President of the Republic on the 27th of July 2022 and was enacted through ACT No. XI of 2022 and came into force on the 29th of July 2022 as per Legal Notice LN 216/2022.

1.15. Protocols

The Protocol for Additional Fertilisation Requests (AFR) was established in writing by the Authority compiling all criteria and methodology for the application to grant more than two (2) oocytes up to a maximum of five (5) oocytes to be fertilised and consequently permission for embryo cryopreservation. The first AFR Protocol was presented to the Parliamentary Health Committee on the 13th of September 2018 and was unanimously approved on same day.

The MDH ART Clinic started offering additional fertilisations up to maximum five (5) oocytes and embryo cryopreservation as from the October 2018 cycle.

St James Assisted Conception Unit informed the Authority that they will not be offering embryo cryopreservation in the October 2018 cycles, thus additional fertilisations were not approved by the Authority and all prospective parents had permission to fertilise two (2) oocytes only. However, in the first quarter of 2019, the Responsible Person of the St James Assisted Conception Unit informed the Authority in writing that now the Clinic will start offering embryo cryopreservation to the prospective parents who will be undergoing their cycles as of February 2019.

Following the introduction of the new amended law, clinics had to sign contracts with prospective parents who opted to cryopreserve their embryos as per required by the terms of the law. Both licenced tissue establishments are now providing the contracts to the Authority. The Authority has noted that whilst the private tissue establishment contracts are signed by the patients and representative of the Tissue Establishment, the Public MDH ART Clinic contracts are signed by Licence Holder, the patients and by the Chief Medical Officer and not by the Tissue Establishment personnel.

Pursuant to changes coming into force, donations of third-party gametes were allowed by law for all prospective parents as defined by law as any person regardless of gender or sexual orientation, who has attained the age of majority and is a receiver or user of the medically assisted procreation techniques. Thus, these services are provided to single women, heterosexual couples, and lesbian couples.

After the introduction of the changes in law, St James Conception Unit has informed the Authority that they do not wish to perform any cycles using donated oocytes, sperm, or embryos and that they will not seek to be licenced to provide such services

or the distribution or importation of third-party gametes from abroad to store in Malta.

On the other hand, the Public MDH ART clinic has sought permission from the Authority to start offering third party donations as allowed by law, those being of Known Direct Donations and donations through the distribution of sperm and oocytes from abroad.

After several meetings held between the Authority, legal representatives, the office of the Chief Medical Officer and the MDH ART Clinic personnel, the necessary documentation was drafted for the approval of the Authority to grant permission for Known Direct (local) Donation of non-partner gametes (sperm and oocytes).

The Embryo Protection Authority granted its approval for same services and in 2019 the Superintendent of Public Health issued a licence for Known Direct (local) donations for both sperm and oocytes to MDH ART Clinic. However, to date no requests have been made by the MDH ART Clinic for direct donation neither through IUI nor IVF.

For the distribution of donor gametes from abroad to be brought to Malta a third-party agreement had to be reached between the ART Clinic and the foreign tissue establishment. The Authority was involved in quite a number of meetings with the legal representatives, office of the Chief Medical Officer, the Licence Holders, and representatives of the ART Clinic together with the foreign tissue establishment for the distribution of third party (non-partner) donor sperm to Malta. Following submission of the necessary documentation that was certified as being in line with

Maltese Embryo Protection Act Legislation, the Authority issued its approval for the distribution of sperm from a sperm bank in a European Union Member State.

Subsequently the Superintendent of Public Health issued a Licence to the MDH ART Clinic in May 2020 for the non-partner sperm distribution from abroad, to be used in open donations. These procedures will be regulated with identity release of donor identifying information to the child on reaching age of majority if s/he only requests it. These third-party sperm donations can be used in both IUI and IVF procedures.

Distribution of third-party donor oocytes from abroad is still not approved by the Authority as no third-party agreement has been reached by the MDH ART Clinic with a foreign tissue establishment yet.

The Embryo Protection Authority was presented with a draft third party agreement by MDH ART Clinic with an EU tissue establishment. The Authority brought to the attention of the Clinic that this was not in line with Maltese Legislation. Several meetings were held to this effect with the MDH ART Clinic personnel, the Chief Medical Officer, the Licence holders, and legal representatives to explain why this draft agreement was not in line with Maltese Legislation and needed amendments.

The Authority's position was final and that it could not approve this agreement as the foreign tissue establishment could not provide all the required donor documentation to the Embryo Protection Authority as well as the duration of donor record keeping was not in line with Maltese Legislation. Thus, amendments need to

be made for the Authority to approve and Superintendence of Public Health to issue licence for the distribution of donor oocytes from abroad.

In 2022, several meetings were also held by the Authority with the Chief Medical Officer's office as well as the State Advocate office on other necessary changes to the Embryo Protection Act for the introduction of a new service of PGTM and other necessary changes to law to allow for the smooth distribution of third-party donor gametes namely oocytes from abroad to Maltese Tissue Establishments.

The Protocol for Additional Fertilisation Requests (AFR) was revised again in 2022 to reflect he changes to the Embryo Protection Act and the introduction of PGTM. The Authority's compiling of the Protocol which incorporates all criteria and methodology for the application to grant more than two oocytes up to a maximum of twelve oocytes to be fertilised and consequently permission for embryo cryopreservation.

The new changes now reflect more the needs of patients according to their age and the blanket statement of providing maximum of five (5) oocytes to all have been removed. The third edition of the Protocol now allows for Women who have not attained age 39 can be granted up to a maximum of five (5) oocytes, Women aged 39 up to 45 years can be granted up to a maximum of eight (8) oocytes. Prospective parents where the woman has not attained thirty-six (36) years of age will be allowed up to a maximum of eight (8) oocytes/embryos to undergo PGTM. Prospective parents where the woman has attained thirty-six (36) years and have not attained forty-six (46) years of age will be allowed up to a maximum of twelve (12) oocytes/embryos to undergo PGTM. No permissions will be granted by the Authority that will exceed the Maximum capping of twelve (12) oocytes.

For the very first time the Authority has also provided for the compiling of a new Protocol specific for PGTM. In Malta, PGTM is regulated by the Embryo Protection Authority (EPA). The Authority maintains a list of conditions for which PGTM has been approved, as per table reproduced in Subsidiary Legislation 524.02 published on the 29th of July 2022 through Legal Notice 215/2022, the Authority approved nine Monogenic Conditions for which PGTM can be performed in Malta. The nine conditions are: Finnish Nephrotic Syndrome, Gangliosidosis, Huntington Disease, Joubert Syndrome, Maple Syrup Urine Syndrome, Nemaline Myopathy, Spinal Muscular Atrophy, Tay-Sachs Disease, and Walker-Warburg Syndrome.

The Protocol lays down all the processes that are regulated and the necessary steps to be taken throughout the whole process. It also includes sections to cover for training of additional staff required for this activity: genetic counsellors (separate from infertility counsellors), geneticists, embryologists trained in PGT. If service is being outsourced, then agreements with same are to be provided. The Protocol also details the application by clinic on behalf of prospective parent for the addition of new conditions for PGTM.

The Protocol also takes into consideration the introduction of PGTM with non-disclosure wherein the prospective parent might opt out of knowing the result of the PGTM. This is to include the necessary forms and documents as per required. Another detailed section covers for PGTM procedure application for approval with the EPA Authority including the necessary documentation required. The Protocol also goes into detail about the information to be provided to patients, transfer, and cryopreservation of embryos and for the labelling of both the embryo cell and the embryo from which the sample has been taken.

The Protocol also specifies the necessary reporting to be made to the EPA Authority including the PGTM work up report, the PGTM clinical cycle report and the separate reporting of PGTM live births. The Protocol also specifies that if only the biopsies are carried in house, and the genetic testing is carried out in another centre, then transport arrangements and third-party agreements are to be put in place

The Third Edition of the Protocol was presented to the Parliamentary Health Committee on the 24th of August 2022 and was unanimously approved on same day.

Following a meeting held with the Malta College for Obstetric and Gynaecologists as in line with Article 22 of the Act every medical practitioner is to keep a register of all medically assisted procedures, including intra-uterine inseminations and forward these registers to the Authority without delay. To date thirteen clinics have registered with the Authority although we are of the knowledge that much more practitioners perform this procedure prior to referring patients for IVF.

In 2022, ten out of the thirteen clinics had paid their Annual Registration fee to perform IUIs with partner sperm. The three other clinics informed the Authority that they were no longer interested in performing IUI and had opted out of registration.

1.16. ART Prioritization Committee

The Ministry for Health considers the fact that parent / parents requiring IVF cannot be waitlisted on a *first come-first served* basis. To this effect, the Ministry appointed an ART (Assisted Reproductive Technology) Prioritization Committee with the aim of objectively ranking in order of precedence the prospective parents who are seeking assistance at the ART Clinic at Mater Dei Hospital (MDH). Each clinical case is considered individually, and priority of treatment is given to prospective parents where female age is an issue, since delays in providing an opportunity for treatment may make the couple ineligible for future treatment. Other factors, such as AMH levels, semen parameters, paternal age, duration of infertility, previous failed IVF/ICSI attempts, recurrent miscarriages, etc., are also considered. During 2022 the Authority was represented on this Committee by its Chief Executive Officer Ms. Simone Attard and by Profs. Victor Grech as member.

During 2022, the prioritisation Committee revised the criteria for prioritisation of prospective parents and introduced new prioritisation criteria for prospective parents making use of third party donated sperm.

Since new cases are registered at Mater Dei Hospital every week, this Committee met on a monthly basis, with an unforeseen delay between meetings due to COVID 19, to decide which of these prospective parents requires prioritization for treatment. A total of seven (7) sittings were held during 2022.

Nine (9) reports were consequently issued showing a total of two hundred and seventy one (271) prospective parent/s files that had been reviewed by the ART

Prioritisation Committee during 2022, this saw an increase over the two hundred and forty seven (247) files reviewed in 2021 and the one hundred and fifty five (155) files that were reviewed in 2020. The majority of the files reviewed came from two hundred and twenty-six (226) heterosexual prospective parents who were going treatment with their own gametes. The other forty-five (45) files reviewed came from prospective parent/ parents who were going to undergo treatment with the use of third-party identity release donor sperm.

Again, here an increase was registered as in the previous year, in 2021, the committee had prioritised thirty-six (36) prospective parents. These forty-five (45) applications for use of identity release third party donor sperm, were filed by ten (10) heterosexual couples, twenty-five (25) from same sex female couples and ten (10) applications were filed by single women. Noteworthy is the fact, that in 2022, the number of applications from same sex female prospective parents was three times higher than the previous year, twenty five (25) applications as compared to eight (8) applications in 2021.

Two hundred and fifty-seven (257) prospective parent/parents were prioritised as they met the necessary criteria for prioritisation. Fourteen (14) prospective parent/s were deemed ineligible for the prioritisation process as the files presented by the MDH ART Clinic had missing documentation, thus the Committee requested that these files will be prioritised in following sessions when all documents are in order.

1.17. Inspections

The Authority, from time to time makes the necessary inspections to ensure that there are no infringements of the provisions of the Act or the Regulations, or of the Protocol which the Authority is entitled to enforce. These inspections are held to make certain that the standards of best practice are being respected and implemented, that the documented system which ensures the identification of all gametes and embryos from procurement to use is in place, and that the storage and consignment of gametes from one centre to another is verified against Standards of Practice (SOPs) and third-party agreements, as required in the EU Directive.

Following the changes to the Embryo Protection Act in 2018, the Superintendence of Public Health received an application for the licencing of a new tissue establishment in Malta that will offer Assisted Reproduction Technology services. This application was forwarded to the Authority for its approval.

The application was in the process of being assessed by both the SPH and EPA following the submission of a robust quality system, standard operating procedures, and third-party agreements as well as other validation reports. Meetings were held internally between the SPH and EPA personnel, and another meeting was held between both Authorities and the proposed licence holder, Responsible person, and Quality Manager of the new Tissue Establishment.

A joint inspection was held by SPH and EPA between the 22nd of February 2022 and the 24th of February 2022 to assess the recommendation of a new licence. Following the submission of the necessary documentation HOPE Fertility and

IVF were issued with a licence on the 1st of May 2022 valid for two years up to 2024. The activities that were licenced include Donation of sperm and oocytes (autologous), Donation of local known oocytes, Procurement of sperm and oocyte, Donor testing, Processing semen (procurement, processing, storage, transfer), Processing oocytes (procurement, processing, storage, transfer), Intra Uterine Insemination (IUI), In vitro fertilisation with/without micromanipulation, Intra cytoplasmic sperm injection (ICSI), Assisted hatching (mechanical, chemical, laser), Embryo culture and transfer, Preservation of sperm, oocytes, and embryos, Storage of sperm, oocytes, and embryos, Distribution of autologous gametes and embryos (from/to local tissue establishments) and Open donation (identity release at 18 years) of non-partner sperm distribution from abroad as per third party agreement approved by the Competent Authorities.

Following the issuance of the licence and the coming into force of amendments to the EPA Act, the HOPE Fertility and IVF clinic applied for a variance in licence to also allow for the procurement of open identity release third-party oocyte donations. This application was still being assessed by the end of 2022.

With regards to St James Conception Unit, a variation in licence was requested by the Tissue Establishment, following a meeting held between the Embryo Protection Authority CEO and the Responsible Person and Licence Holder of the Tissue Establishment. In August 2021, patients had informed the Authority that their forthcoming cycle was suspended with no prior notice. A new licence was issued by SPH to St James Conception Unit with changes in activities and is valid up to 19th November 2023. This licence covers only Storage of sperm, oocytes, and embryos, Distribution of autologous gametes and embryos (from/to local tissue establishments) and Intra Uterine Inseminations (IUI).

MDH ART Clinic licence was due for renewal in April 2022, taking into consideration that the Responsible Person of the clinic was out of office and the expected changes to the IVF law in the near future, the Licensing Authority had authorised that MDH licence be extended until 30th November 2022.

A joint inspection was held by SPH and EPA between the 1st of November and the 4th of November 2022 to assess the recommendation of a renewal of the existing licence. As a number of deficiencies were noted the Inspectorate team requested a plan of action on how these deficiencies will be addressed by the Clinic. To this effect the licence was renewed for two months only, up to end of January 2023.

1.18. Incidents, investigations, and actions taken

In the first quarter of 2022, MDH ART Clinic requested an urgent approval for a patient which was to undergo an embryo transfer the next day, without the necessary approval granted through EEART. The Authority informed the MDH ART Clinic that it is unacceptable that the clinic has scheduled patient for transfer for the following without EPA approval, the request for approval still showed that 'pending additional documentation' was still to be submitted to the Authority, as the embryo cryopreservation contract which is obligatory by law was still not received. This contract should have been signed and sent to the Authority once the embryos were cryopreserved in the previous cycle.

The Authority requested the Responsible Person of the MDH ART Clinic to take the necessary steps to avoid this happening again and with Clinic booking patient

for further treatment only when they have the necessary EPA Approval, whilst the Authority reserves the right to take the necessary action on this episode.

The Responsible Person of the MDH ART Clinic replied to the Authority insisting that he agrees with the Authority and that it is unacceptable to schedule a patient for treatment without the final EPA approval. The Responsible Person assured the Authority that more controls will be implemented immediately to ensure no repeats of the sort and that they take seriously compliance to their regulatory obligations.

In October 2021, the Authority Board Secretary underwent an exercise to identify files of patients at the MDH ART Clinic that had been approved by the Board in the previous years' however, the Authority noted that although these files were prioritized and approved, procedures were still showing on the EEART as pending to undergo treatment. The Authority requested an explanation from the MDH ART Clinic to this issue.

The Authority informed the MDH ART Clinic that this exercise shall be performed by the MDH ART Clinic on a yearly basis so that the Authority will have a full picture of all the approvals granted and the drop out of patients after approval. This exercise for 2022, had not yet been submitted to EPA by end of 2022.

In November 2021, the Authority received a notification of a near miss on the Incident Reporting Platform from MDH ART Clinic. The clinic had received a report from the supplying foreign donor sperm bank, that a mentioned donor, whose gametes had been distributed to Malta was under investigation following the diagnosis of a genetic disorder in a child born from his donation in another country.

Further genetic testing was to be done on the donor by the supplying foreign sperm bank to identify the root cause. The mentioned sperm samples from this donor were received at the MDH ART Clinic in August of 2021, however had not yet been used by the prospective parent as she had not yet started the treatment process at the MDH ART Clinic. As sperm from this donor should not be used for treatment the four sperm vials received in Malta were removed from released storage and were transferred to a Quarantine Storage until further update from the supplying foreign bank to transfer them back to them. The Authority has also taken the necessary measures to block this donor on the EEART platform. After further notifications from the supplying foreign sperm bank, the four vials of this donor were sent back to the sperm bank in July 2022.

In February 2022, the Authority received another notification of a near miss on the Incident Reporting Platform from MDH ART Clinic. The clinic had received a report from the supplying foreign donor sperm bank, that a mentioned donor, whose gametes had been distributed to Malta was under investigation The sperm samples from this donor were received at the MDH ART Clinic, however had not yet been used by the intended prospective parent as she had postponed treatment to later date. The four sperm vials received in Malta were removed from released storage and were transferred to a Quarantine Storage. The Authority has also taken the necessary measures to block this donor on the EEART platform. After further notifications from the supplying foreign sperm bank, the four vials of this donor were sent back to the sperm bank in July 2022.

In April 2022, the Authority received a notification of a Severe adverse event (SAE) on the Incident Reporting Platform from MDH ART Clinic. The clinic had received

a report from the supplying foreign donor sperm bank, that a mentioned donor, whose gametes had been distributed to Malta was under investigation following the birth of a child in another country, who was diagnosed with an autosomal recessive inherited condition. In May 2022 another notification was received to permanently block this donor, as further investigations have resulted that he was a carrier of the autosomal recessive inherited condition. The prospective parent who had made used of this donor in her treatment was counselled about this matter. The remaining three sperm vials still stored in Malta were removed from released storage and were transferred to a Quarantine Storage. The donor sperm was permanently blocked by the Authority on the EEART platform, and the three vials of this donor were sent back to the sperm bank in July 2022.

In June 2022, the Authority received another notification of a near miss on the Incident Reporting Platform from MDH ART Clinic. The clinic had received a report from the supplying foreign donor sperm bank, that another mentioned donor, whose gametes had been distributed to Malta was under investigation The donor sperm received at the MDH ART Clinic had been used by the intended prospective parent for the creation of embryos to be used in treatment. The prospective patient was counselled about the matter and further notification was to be received from the sending foreign sperm bank. The Authority has also taken the necessary measures to block this donor on the EEART platform.

In October 2022, the Authority Board Secretary notified the Board, that a number of cryopreservation agreements for embryos as required by Art 7 (3) of the EPA Act have not been sent to EPA by the MDH ART Clinic within the stipulated timeframes. The MDH ART Clinic is required to draw up these agreements with prospective parents, prior to cryopreservation of the embryos as per hereunder:

'Embryos which cannot be transferred into the prospective parent within a treatment cycle shall be cryo-preserved in licensed tissue establishments for future use by that prospective parent: Provided that the cryo-preservation of embryos shall be regulated by an agreement between the prospective parent or prospective parents and the licensee subject to the prior authorisation of the Authority and shall have a maximum term of validity of five years renewable up to a maximum permissible age for the transfer thereof into the prospective parent in terms of the Protocol'

This is not the first time that this issue has been brought up by the Authority with the MDH ART Clinic, however when contacted it seems that there is lack of agreement between staff, as who should be communicating with patients and chasing these agreements to be sent to the Authority on time.

In the last quarter of 2022, the Authority requested the three tissue establishments, to submit data regarding the cryopreservation in storage of gametes and embryos. It was noted that whilst St James Conception Unit and HOPE Fertility and IVF data were in line with the records held at the Authority. The MDH ART Clinic data submitted did not tally with the records held at the Authority or the monthly reports sent by the Licence holder of the Clinic. This has shown that the current manual data management system proved its limitation and very difficult in providing specific information since it requires several steps of rerouting and verification.

Also in the last quarter of 2022, the attention of the board was drawn to a serious case of misleading information sent to the Authority by the MDH ART Clinic, as

there was a case of abuse of the justification used to report" Risk of OHSS" to freeze all embryos. Reason for all embryo freezing was given as risk of Ovarian Hyperstimulation Syndrome (OHSS) for a ROPA couple when the recipient was not even stimulated for oocyte pickup.

The Authority Board informed the Chief Medical Officer and the Permanent Secretary through a letter and requested that they investigate the case so that there is clarity and transparency in the treatments offered at MDH ART Clinic and the reporting sent to EPA. The Authority Board is still awaiting the outcome of this investigation.

In November 2022, the Authroity noted that from reporting filed on the EEART system by the HOPE Fertility and IVF, a couple had undergone oocyte collection, injection and additional fertilisation of oocytes, the creation and storage of embryos without the prior approval of the Authority. Article 13 of Regulatory Principles for Licenced Tissue Establishments Subsidiary Legislation 524.02 of the Embryo Protection Act and EPA Protocol clearly indicates that a request prior to any ART Procedure is to be sought from the Authority. Moreover request for additional fertilisation was not submitted prior to this case and maximum of five (5) oocytes were fertiised without the Authority approval, in breach of legislation.

The Authority sent a letter to the Liecece Holder and Responsibe Person of the HOPE Fertility and IVF Clininc and issued them with a first time offence fine of €5,000-, as a result of breach of Legislation. Moreover the Authroity reserved the right that if another incident of breach of law occurs in the near future, it will inform

the Supeintendent of Public Health to take further action which might include the suspension of licence.

During 2022, the Authority received several complaints from patients who had undergone or were in the process of undergoing treatment at the public tissue establishments. Most of the complaints were mainly on the long waiting list and the waiting time to undergo the procedure on the NHS, when we all know that time for these patients is very precious. Other complaints received were that patients wished to have a more personalised protocol. One other patient complained that she had undergone IVF treatment at both the public and private facilities, however whilst at the private facility embryos were cultured up to day 5 or day six and transferred fresh, at the public facility they were cultured to day 3 and frozen.

During one of the Board meetings of the Authority on 2021, the Board secretary informed the members that from requests received to be approved by board, it was evident that MDH ART Clinic were calling patients not as per listed in the Prioritisation lists which the ART Prioritisation Committee lists in order of precedence. The Board was also informed that a particular patient from the latest report issued prior to the Board meeting had scored not too high was called prior to other patients in the previous reports and prior to all the patients that scored before her in the same report she was prioritised in. The Board resolved that a letter is to be sent by Hon Judge Sciberras as Chairperson of the Authority on behalf of the Board to Dr Denis Vella Baldacchino, the then CMO responsible for the MDH ART Clinic, and copied in were Permanent Secretary Mr Joseph Rapa and Profs Yves Muscat Baron as the Clinical Chairperson.

The Permanent Secretary informed the Authority that this issue was raised with the new Chief Medical Officer Dr Walter Busuttil, and an investigative board will be appointed to investigate the matter and report back to CMO and Permanent Secretary, who will then report outcome to the Authority. At the end of reporting year 2022, the Authority still awaits to receive outcome of this investigation.

In the last quarter of 2020, the Authority was also notified that a complaint had been filed by a couple with the Ombudsman Officer against the MDH ART Clinic, in relation to the conduct, treatment received, action and/or inaction of the ART Clinic personnel regarding the couple's treatment procedure. The couple are requesting redress and the Ombudsman to investigate.

The file is currently being processed by the Ombudsman's office and during 2022 communication was made with the Authority by the New Ombudsman's office on same case. The Authority still awaits outcome of same.

Other complaints were received by the Authority from prospective parents who were undergoing treatment at the private facility or abroad. These complaints were not directly related to the clinics they were receiving treatment, but their main complaint was that although they were benefiting from the Special IVF Leave, the still had to pay for their stimulation medication, unlike the patients who were receiving their treatment on the NHS.

1.19. Other work by the Authority

Apart from the normal processing of all applications for treatment, requests for additional fertilizations, and the storage of gametes (a detailed report is given in the second part of this report), the Authority was in continuous communication with the Ministry for Health in order to provide the relevant information in answer to the several Parliamentary Questions (PQs) repeatedly made on the ART procedures offered on the NHS, and the Eligibility Criteria as established in the Embryo Protection Authority's Protocol. The CEO was also in constant contact with the Chief Medical Officer's office to advice on other matters and especially on the amendments required to the NHS eligibility criteria, which came into effect in 2020 through DH68/2020 and amended again in 2022 following the changes in legislation.

Another joint venture held with the office of the Chief Medical officer and Mater Dei Hospital Finance office as well as the Cross Border Committee was the establishing of all individual services and the breakdown of every ART procedure into segments to enable the issue of the proper costings for each part of the different ART procedures. These costings would be used for the re-imbursement of costs incurred by patients who would apply through the cross-border committee for funding. These were also updated to reflect the recent changes in legislation.

Several meetings were also held in 2022, in conjunction with the Chief Medical Officer's audit office, Mater Dei, Obstetrics and Gynae Department, Central Procurement and Supplies Unit, Directorate for Pharmaceutical Affairs, Permanent Secretary as well as with the Hon Deputy Prime Minister and Minister for Health, prior to the introduction of free stimulation medication for the patients undergoing

the process at the MDH ART Clinic as announced in the Health Budget. This measure came into effect as of 1st of January 2022.

Several meetings were also held with the Chief Medical Officer's office, firstly with the outgoing CMO and with the newly appointed CMO re the way forward for the ART Services carried out at the MDH ART Clinic. These meetings were held in conjunction with the CEO of Mater Dei, the Managing Director of CPSU and the Licence Holder of the MDH ART Clinic.

Work was also ongoing on the new IT solution that has linked all licensed clinics to the Authority so all documentation can be filed online thus enabling the Authority to have real time data. This high-end software system for the Electronic Exchange and filing of Assisted Reproductive Technologies (EEART) that meets the current and future requirements of the Embryo Protection Authority enables the handling of all applications for treatment, approvals for additional fertilisation, oocyte and sperm collection, fertilisations, embryo transfers, gamete and embryo storage, pregnancies and life births, and embryo adoption, all to be filed online.

It will also provide for the handling of Intra-Uterine insemination procedures, as well as the cryopreservation and storage of gametes and embryos for patients prior to receiving oncology treatment for preservation of fertility for future use. The system provides also for the movement of gametes and embryos between tissue establishments in Malta as well as the distribution of gametes and embryos to and from foreign clinics.

This system also features, as required by the EPA Act, the keeping of registers of all assisted reproductive procedures carried out in Malta. It also supports the encryption of donor identity data which will be held at the Authority and will only be released if the donor conceived child requests this information on attaining age of majority.

In 2022, this was also updated to now cater for the recent changes to the EPA Legislation. It also supports the possibility of including other clinics who will opt to offer ART services in the future.

In addition to the monitoring of ART services given to patients by the licensed Clinics, the Authority also supervises the storage of gametes. A Gamete Storage Inventory (Dewar mapping) which stretches back to the date of first cryopreservations (July 2013), is kept by the Authority. This serves to ensure that storage of gametes is being properly documented to guarantee full traceability.

Together with the SPH, the EPA strives to make sure that each licensed Clinic adopts a Quality Management System that is in line with the EU Directives and Human Tissues and Cells Local Legislations related to the ART services.

In 2022, the British Infertility Counsellors Association (BICA) Accredited by the Counselling and Psychotherapy Central Awarding Body (CPCAB) which is the only Awarding Body to specialise in Counselling, invited the Chief Executive Officer to contribute to the Journal of Fertility Counselling.

Previous articles were also published in the summer edition of the Journal detailing the journey from the initial contribution by Mrs Attard to the Maltese Parliament way back in 2004 to the introduction of the Principal Embryo Protection Act and the latest Amendments to the Act were highlighted as well as the way forward. These publications, and the way Malta has progressed in this sector were always well received by our counterparts in other European Countries.

Since the Authority processes personal data, in 2017 it took the necessary measures to be in conformity with the Data Protection Act, and duly registered its operations with the Commissioner for Data Protection and appointed a Data Protection Officer to take care of Data Protection issues. To this effect with the introduction of the recent changes to the Act, the Authority underwent the exercise of Data Protection Impact Assessment for all new processes that were being introduced.

The Authority's website was launched on the Ministry for Health's portal, though continuous collaboration with the Information Management Unit of the Ministry for Health in 2017. The website contains the Authority's Mission Statement, details about the Entity's Corporate Identity, Board Members and Executive Administration together with an Organisation Chart. All publications of the Authority have also been uploaded and these include: The Act and Legal Notices, EU Directives, Authority's Protocol, and all Annual Reports issued to date. During 2022, the website was being continuously amended and uploaded with the new changes that came into effect. The website can be accessed on www.epa.gov.mt .

During the whole calendar year, the Authority was invited by various media stations to attend to various programmes both televised on different tv stations especially on

the National Television station TVM, the Authority was also invited to attend radio programmes aired on various radio stations. In these programmes the Authority was invited to inform re the changes that were coming into effect with the recent changes in legislation, as well as the general work of the Authority and following the Annual publication of the Authority report and other achievements of the Authority.

1.20. Annual submissions and debate in Parliament

Pursuant to the EPA Regulations of 2015, Subsidiary legislation 524.01, the Authority is taking the necessary measures towards becoming fully autonomous and to this effect had sent a letter to all Tissue Establishment Licence Holders and to the Heads of IUI Centres.

In this letter it was explained that changes to Article 32 of the Protocol were being made so that in line with moving forward so that the Authority will become totally autonomous it is envisaged that fees from the sector – Clinics and Tissue Establishment will cover the majority of the costs of Regulation. This article was updated again following the introduction of new services in 2022.

It is the vision of the Authority that when, in the coming years, the number of cycles increase from various Tissue Establishments, these will fully fund the cost of Regulation and at that point the Authority becomes fully autonomous and will not depend on funding from the Central Government.

The Deputy Prime Minister and Minister for Health, Hon. Chris Fearne on the 16th of May 2022, laid on the Table of the House of Representatives, the Embryo Protection Authority's Audited Accounts for 2021 and Financial Estimates for 2022, together with the Authority's Annual Report for 2021. A Parliamentary debate on the Authority's finances and work was held in one sitting on the 28th of June 2022 in the morning and a vote taken in plenary on same day.

FERTILITY TREATMENTS IN MALTA FOR 2022 – TRENDS AND FIGURES

In line with LN32 of 2015 and the Embryo Protection Authority's Protocol which has been prepared in accordance with the Embryo Protection Act, clinics in both the private and public sector are bound to provide the Authority with accurate data about their activities. This data is held on the Authority's Register of ART Procedures and the accuracy of this report is based on the information provided by the Licence Holders of the Clinics as of 28th February 2022.

Article 22 of the Embryo Protection Act, which came into force on 1st October 2018 also requires that all medical practitioners keep a register with full details of all medical assisted procreation procedures, including also Intra Uterine Inseminations and pass this information without delay to the Authority.

Information about our data

These are official statistics of treatments carried out between 1st January 2022 and 31st December 2022 as recorded by the Tissue Establishments and Clinics themselves on the EEART platform. The Embryo Protection Act made it a legal requirement for every fertility clinic in the Maltese Islands to submit information on all fertility treatments and children born as a result to the Embryo Protection Act activities. The Embryo Protection Authority, as also required by the Act, holds a Register of these treatments since 2013, which is the largest database of fertility treatment on the Maltese Islands comprising all activities held in the Public and

Private fertility clinics. This Register also holds detailed information on partner intrauterine insemination (IUI) and activities using donor gametes. As an Authority we produce this statistical release on an annual basis. As Regulator and the holder of the statutory Register of fertility treatments, we take our responsibilities for information management and security most seriously and have a low tolerance for information risks. We have taken all the necessary measures in keeping secure the information we hold, particularly sensitive personal patient and donor data. It is our highest priority, and this principle has framed our approach to the implementation of more digital projects for backup and recovery plans in 2022.

Accuracy and reliability

We report on cycle level information rather than patient level information. We however also include a section on the number of patients doing multiple cycles. For a typical cycle, clinics will initially report patient registration, cycle-related information and early outcomes including pregnancies in line with the Authority Protocol, once the birth is registered clinics will subsequently report the outcome of cycles for which they reported a pregnancy, if a miscarriage takes place, this is also reported to the Authority.

The Register undergoes regular validation – this was last completed in December 2022. Treatment cycles performed on or before 31 December 2022 have been verified along with their pregnancy status. Live births have been verified for treatments that took place in early 2022. Other subsequent live births occurring in 2023 for cycles carried out in 2022 are registered as Expected live births in this Report. The Actual live births for the full year 2022 will be included in the report of the following year.

2. CYCLES PERFORMED

2.1. Cycles, Intra Uterine Inseminations and Cryopreservations Approved by the Embryo Protection Authority Board

With the introduction of the amendments to the law, embryo cryopreservation was now possible to be carried out as part of the cycle if the prospective parent/s opted for it together with embryo donation if necessary. Prospective parent/s could still opt for the request to fertilise two (2) oocytes only and have them transferred without embryo cryopreservation. As new types of cycles where being introduced during 2022, we are hereby providing the definitions for the terminology being used in this year's Annual Report.

A **Cycle** refers to all treatments that are conducted at a fertility clinic.

Oocyte cryopreservation cycle is a treatment where prospective parent/s have all their oocytes collected and cryopreserved for future use due to medical reasons or for other social reasons.

Fresh oocytes treatment cycle is a treatment cycle in which fresh oocytes are collected and are injected with sperm which may result in a fresh embryo which is transferred during IVF. IVF treatments in this report include ICSI.

Thaw oocyte treatment cycle is a treatment cycle where prospective parents use their cryopreserved oocytes in an IVF treatment cycle.

Cryopreserved / Thaw embryo treatment cycle is a treatment cycle in which a frozen embryo or embryos are transferred during IVF. Maltese Legislation allows only for the maximum of two (2) embryos (irrespective of fresh or cryopreserved embryos) to be transferred in each treatment cycle.

Embryo 'freeze all' cycle is a cycle in which all created embryos are cryopreserved due to the patient either having a risk of OHSS or else some other medical reason which at the time of the cycle the embryos cannot be transferred into the woman.

Reception of Oocytes from the Partner (ROPA) is a cycle which allows same-sex female prospective parents to 'share motherhood'. This technique consists of an In Vitro Fertilization (IVF) procedure where one woman contributes with her oocytes and the other woman contributes with her uterus.

Sperm Cryopreservation refers to cryopreserved sperm which can be produced through a fresh ejaculate or else surgically extracted.

Intra-Uterine Insemination (IUI) is a treatment cycle where sperm is injected into the women's uterus.

For the second time in the Annual report, we are not only reporting the use of partner sperm in IUI's or IVF/ ICSI but have now also included the use of donor sperm in such treatments. Moreover, the term prospective parents this year includes both heterosexual couples, same-sex female prospective parents and single women.

Throughout 2022, although slowly recovering from the restrictions of the pandemic, the Authority has received a total of **One thousand five hundred and thirteen (1513)** requests. These requests were received for different activities as described hereunder.

These were divided into **nineteen (19)** approvals for **Oocyte cryopreservation cycle** where oocytes were retrieved and cryopreserved only on prior approval by the Authority due to receiving oncology treatment or other medical grounds, so no IVF procedure was carried out following the retrieval. Another **two (2)** approval was granted for **Oocyte cryopreservation cycle** for the preservation of oocytes to females prior to receiving hormonal treatment prior to transitioning to a male. Another **four (4)** approvals were issued to the private tissue establishment for **Oocyte cryopreservation cycle** for social freezing reasons. **Three (3)** other requests were made by three women to be approved as donors in a **ROPA cycle.**

Another substantial increase of 38% was registered in requests for **IVF/ICSI Treatment cycles**. **A total of three hundred and twenty-one (321)** requests were made in 2022, which compares well with the **two hundred and thirty-three (233) applications which** were approved in 2021. The Majority of the requests in 2022, 230 requests came from the public tissue establishments MDH ART Clinic, whilst the remaining 91 requests came from the private tissue establishment HOPE Fertility and IVF. These **321** approvals were issued to **seven (7) same sex female**

prospective parents undergoing an IVF/ICSI cycle with donor sperm, three (3) of which made use of ROPA, **seven (7) single females** undergoing an IVF/ICSI cycle with donor sperm. Approvals were also issued to **five (5) heterosexual prospective parents** undergoing an IVF/ICSI with **donor sperm** and to **three hundred and two (302)** heterosexual prospective parents making use of their own partner sperm.

The three hundred and twenty-one (321) requests were made for **three hundred and fourteen (314) Fresh oocytes treatment cycles** and only **seven (7) applications** were filed, and approvals were granted for **Thaw oocyte treatment cycles** carried out. All these seven applications for thaw cycles came from the HOPE Fertility and IVF private facility, as MDH ART Clinic did not undergo any oocyte thawing processes.

One hundred and ninety-seven (197) requests were received by the Authority for IUI's in 2022. This resulted in a 72% increase for IUI's over the 114 requests made in 2021. All the 197 approvals were issued for **Intra Uterine Inseminations,** these included the approval of **three (3)** requests from **same-sex female prospective parents** who made use of **donor sperm**, **nine (9)** approvals for **heterosexual prospective parents** who made use of **donor sperm**. The remaining **one hundred and eighty-five (185)** approvals for Intra Uterine Inseminations were issued to **heterosexual prospective parents** who made use of their **own partner sperm.**

A total of **Two hundred and ten (210)** approvals were issued for **Cryopreserved / Thaw embryo treatment cycles** in which a frozen embryo or embryos were transferred, here again an increase of 31% was registered over 2021 were 160

requests had been approved. This year's figures show a 300% increase over 2020 when only sixty-nine requests had been made.

One hundred and fifteen (115) requests were received in 2022 for **sperm cryopreservation,** a slight increase over the 96 requested in 2021. All requests were approved and a total of one hundred and three (103) males vitrified sperm whilst twelve (12) males did not vitrify any sperm for future use. Twenty (20) of these males requested to cryopreserve sperm prior to receiving oncology treatment, six (6) other males requested to cryopreserve sperm prior to transitioning from male to female and the other eighty-nine (89) males cryopreserved sperm due to urology factors such as drop in fertility parameters.

During 2022, there were **three hundred and sixteen requests (316)** requests for **Additional fertilisations,** all the requests were approved by Board. This meant an increase of 47% over 2021 when two hundred and five (205) requests were filed. These additional fertilisation requests were filed by prospective parents who wished to make use of the changes brought about with the new legislations in 2018 and 2022, were more than two oocytes were allowed to be fertilised on approvals granted by the Authority.

One (1) AFR request was made by prospective parents who wished to have three (3) oocytes injected, another two (2) prospective parents opted to go for fertilisation of four (4) oocytes, the majority of prospective parents two hundred and ninety-one (291) in total, chose to have five (5) oocytes fertilised. The changes in legislation that came into force as of 29th of July 2022 allowed for the fertilisation of a maximum of eight (8) oocytes, this option was taken up by twenty-two (22) prospective parents.

Five (5) other prospective parents chose to undergo treatment without additional fertilisation requests, one (1) request by prospective parents requested the fertilisation of one (1) oocyte only, whilst four (4) other prospective parents requested the fertilisation of two (2) oocytes only.

Seven (7) approvals were granted for the transfer of gametes and embryos between Maltese Tissue establishments. These included **three (3)** requests for the transfer of oocytes between Maltese Tissue establishments, **two (2)** approvals were further granted to transfer sperm between Maltese Tissue establishments, whilst **two (2)** approvals were issued to transfer embryos from the public to the private tissue establishment.

Another **one (1)** approval was granted to **transfer sperm from abroad to Malta. Three (3)** other requests were received for the **transfer of embryos from abroad to Malta.** Whilst **two (2)** requests were made for the **transfer of oocytes from Malta to abroad, and** another **one (1)** request was made for the **transfer of embryos from Malta to abroad.**

The Authority also approved a total of **twenty-three (23)** requests for the **distribution of donor sperm from abroad to Malta** and another **three (3)** requests for the **return of donor sperm from Malta to abroad.**

One (1) request was received and approved for a prospective parent who wished to discard her **cryopreserved oocytes.**

During 2022, the Authority also received a total of **thirty-two (32)** applications for the approval of **Special Leave for Medically Assisted Procreation,** all applications were approved for patients to undergo treatments in both the public and private facilities as well as in clinics abroad.

For the very first time, in 2022, the Authority started receiving applications for the approval of refund of **Medications used in Medical Assisted Procreation** for patients undergoing treatment on the NHS, a total of **two hundred and forty-eight (248)** applications were received and approved by the Authority.

Thus during 2022, the Embryo Protection Authority received a total of one thousand five hundred and thirteen (1513) requests from heterosexual couples, same-sex female couples, single women, and males. Out of which One thousand five hundred and ten (1510) approvals were issued, whilst only three (3) applications were not approved.

These figures show a massive increase of 68% over the requests made in previous year. There has been an upward growth in the request from previous years, wherein Nine hundred and four applications (904) in 2021, Four hundred and eighty-three (483) applications received in 2020 and, the five hundred and thirteen (513) applications recorded for 2019.

2.2. Intrauterine Inseminations

Since the Authority was established in 2013, this is the fourth year in which the Authority is presenting statistics of Intra Uterine Inseminations carried out in Malta, as prior to the coming into force of the amendments to the Act, only IVF/ICSI procedures were required to be registered with the Embryo Protection Authority.

Intra Uterine Insemination (IUI) is a type of fertility treatment in which the better-quality sperms are separated from sperm that are of lower quality, non-motile or of abnormal morphology. These sperm are then injected directly into the uterus. This procedure may be performed using partner's sperm or donor sperm (known as donor insemination).

IUI may be used in the treatment of prospective parents who need donated sperm but have no female fertility problems, including single women and same sex couples. It may also be used by heterosexual prospective parents who have a male factor infertility and thus need donated sperm. IUI may also be used by heterosexual prospective parents who have unexplained infertility as a first step prior to moving on to IVF, however as it is less invasive and less successful, normally several cycles are performed.

Up to 31st December 2020, only IUI's with partner sperm were being performed, as although the public tissue establishment had a licence to process, distribute and make use of transfer of donor sperm no procedures were reported to the Authority. Local direct non-partner donation was also allowed at MDH however again no IUI's were reported using direct donated non-partner sperm.

As the law came into force in 2018, one private clinic registered with the Authority to perform IUI's with partner sperm. During 2019, seven other clinics, six in the private sector and one in the public sector registered with the Authority to perform IUI's with partner sperm, and during 2020 another three registered with the Authority. In 2021 one other private clinic registered with the Authority, as happened in 2022 bringing the total to thirteen clinics that are registered to perform IUI's with partner sperm.

In May 2020 MDH ART Clinic was licenced to perform IUI's with donor sperm, whilst HOPE Fertility and IVF was licenced in 2022 for donor sperm IUI.

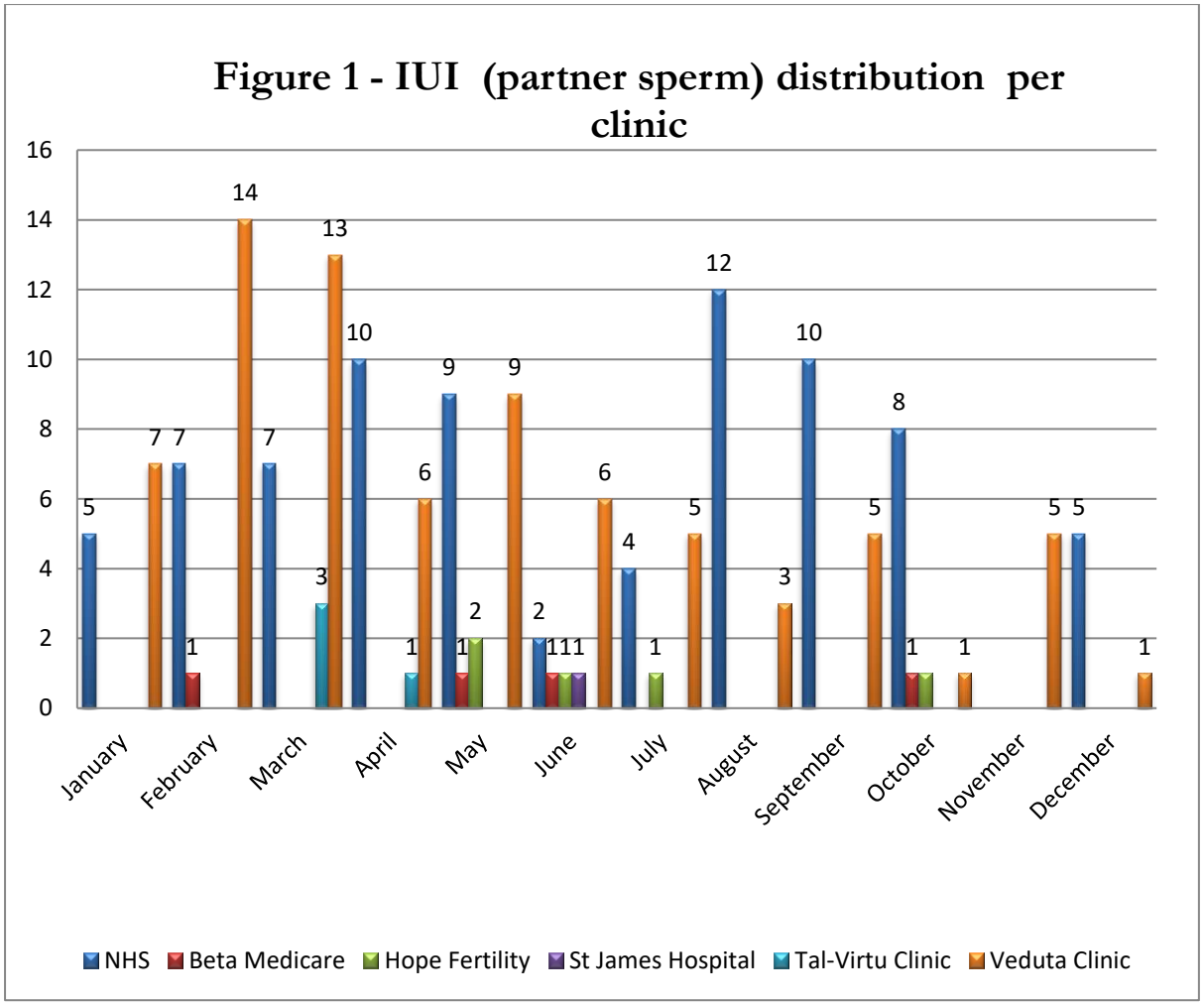
Due to the restrictions of the pandemic, out of the thirteen clinics registered with the Authority, seven clinics informed the Authority that they had suspended treatment with IUI and thus had nothing to report for 2022. Thus, IUI reporting is for six clinics, five in the private sector and one at the public facility registered with the Authority.

2.2.1 Intra Uterine Inseminations with partner sperm

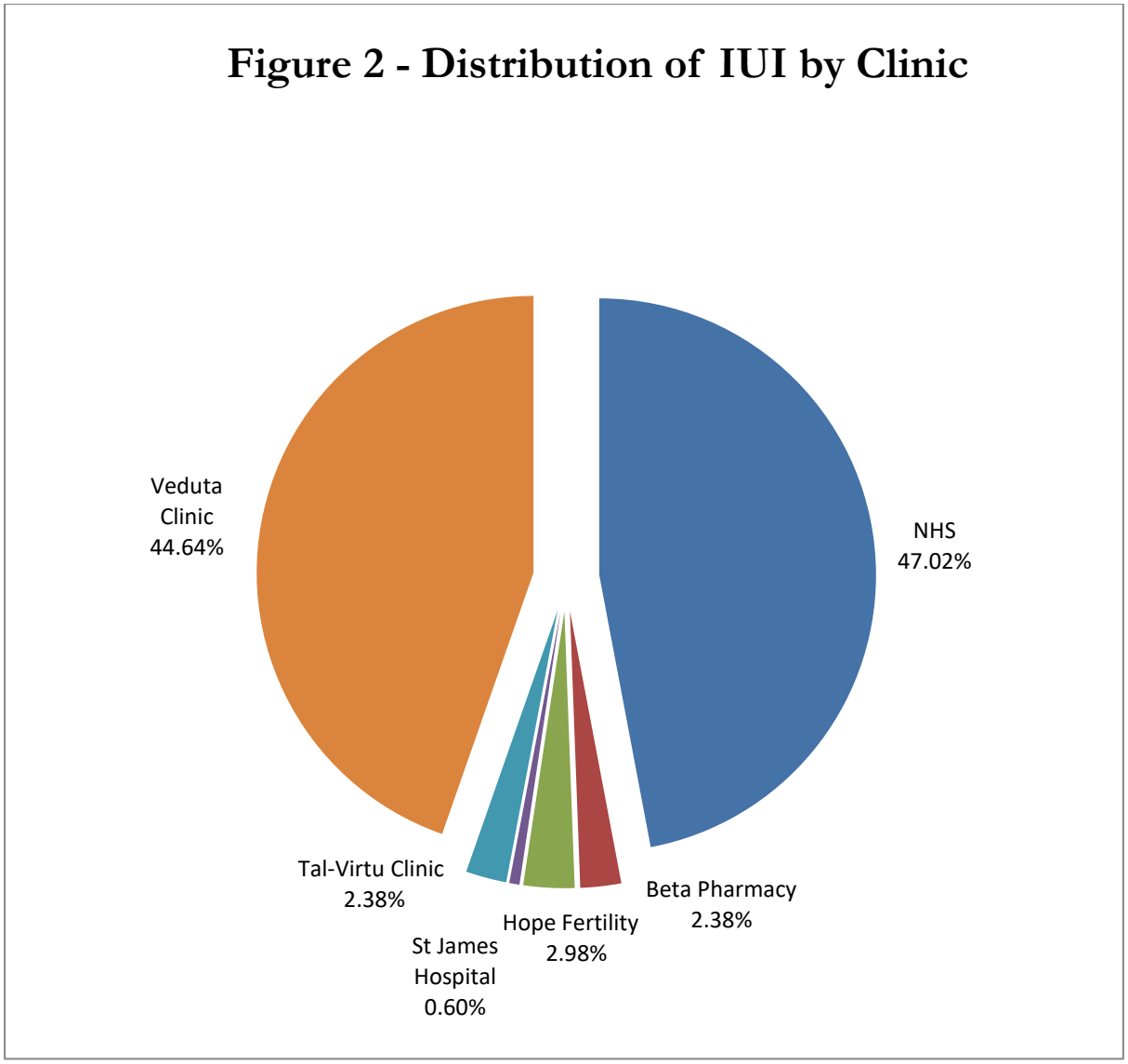
A total of one hundred and sixty eight (168) Intra Uterine Inseminations have been reported to the Authority as carried out up to end of 2022.

Seventy-nine (79) IUIs or 47.02% of total IUIs were carried out at the MDH ART Clinic, followed by seventy-five (75) IUIs or 44.64% of total IUIs were carried out at Veduta Clinic, whilst the remaining fourteen (14) IUIs were carried out as five (5) at Hope Fertility and IVF, four (4) IUIs each were carried out at Beta Medicare and Tal-Virtu Clinic and one (1) IUI was carried out at St James Hospital.

It is to be noted that only the Veduta Clinic offered the IUI services throughout all the months of the year, followed by MDH ART Clinic who offered the IUIs in eleven months of the year. (Figures 1 and 2).

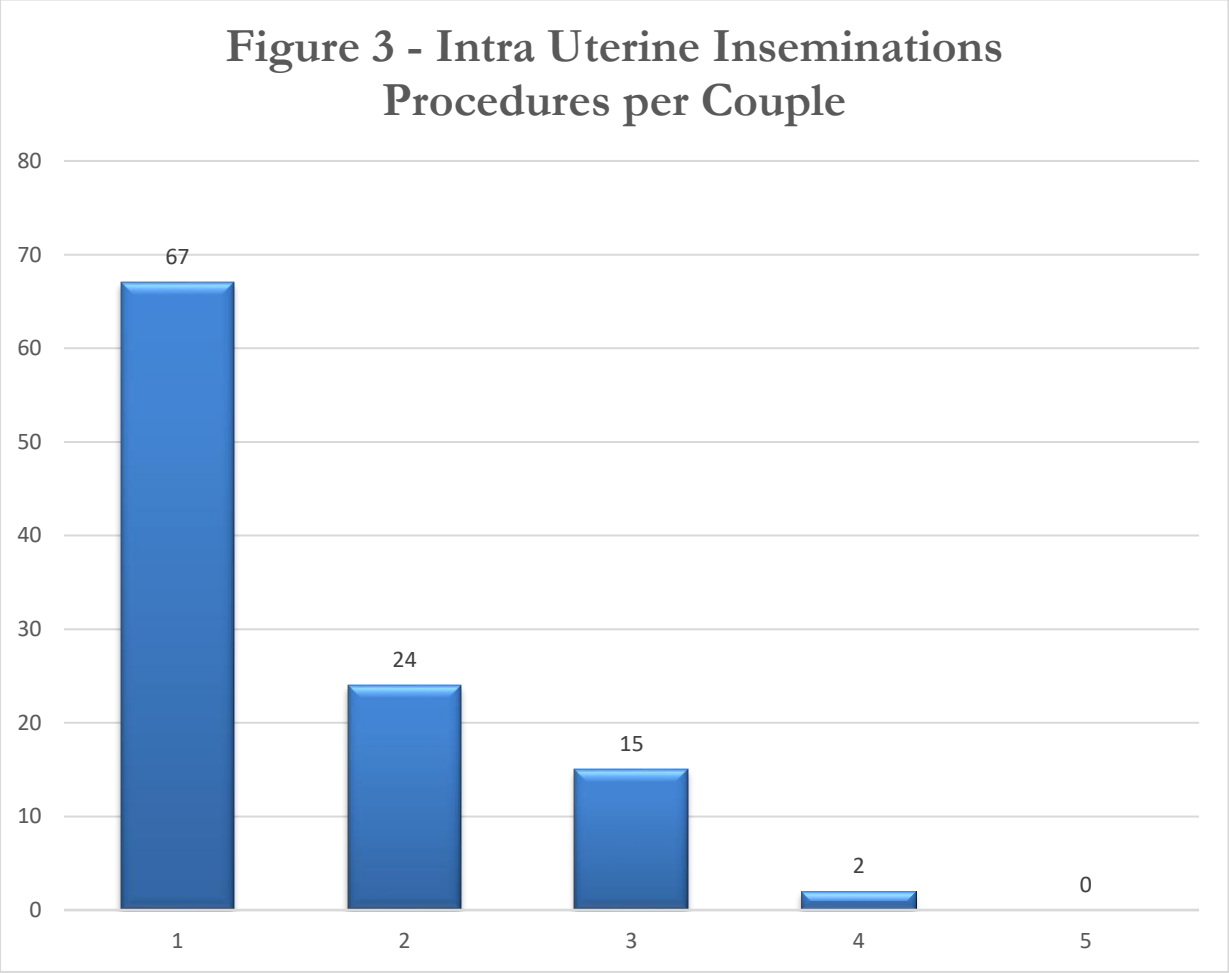


The 168 IUIs were carried out by one hundred and eight (108) heterosexual prospective parents using partner sperm. The procedures were undertaken by women aged between 23 and 45 years which is a wider bracket when compared to ages of year 2021, that ranged from 25 to 43 years, whilst the male partners were aged between 27 and 61 years, a slight shift from last year's parameters which were of males between 26 and 60 years.



The majority of prospective parents sixty-seven (67) had undergone one session of IUI during 2022, followed by twenty-four (24) prospective parents who underwent two sessions in the same year. Fifteen (15) prospective parents were reported as having 3 IUIs during 2022, whilst two (2) prospective parents were reported as undergoing 4 sessions of IUIs in one calendar year. From records filed on the EEART, there were patients who did IUI's at both the private and the public clinics in the same calendar year.

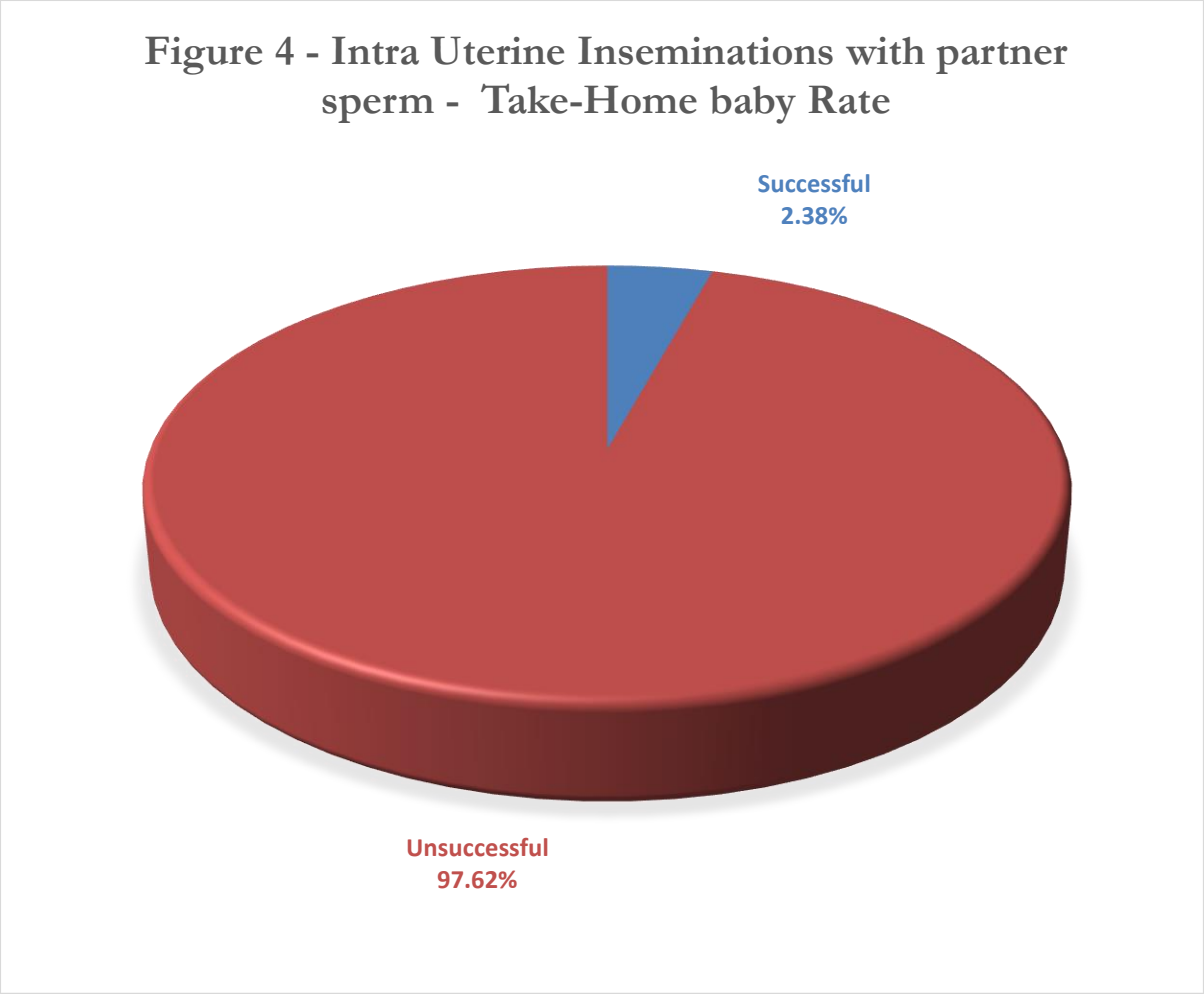
Contrary to what was reported in 2021, this year the majority of IUIs 52.98%, were carried out at the private facilities whilst the public facilities carried out 47.02% of all IUIs. This is also in line with figures of 2020 were the majority of IUIs 60.68% were carried out in the private facilities whilst only 39.32% were carried out in the public facility.



It is well known that Intra Uterine Insemination procedures are less successful than the more invasive IVF/ICSI procedures. In fact, out of the one hundred and sixty-eight (168) cycles carried out, only five (5) pregnancies were reported, four (4) at the MDH ART Clinic and one pregnancy was reported from the private facility Veduta Clinic. One woman suffered a miscarriage, thus only four women have remained

pregnant. Two of the women gave birth to three babies (two boys and a girl) in 2022 and the other 2 women are still expecting to give birth to singletons.

Thus, from data submitted to the Authority for 2022, the pregnancy rate for MDH ART Clinic was of 5.06%, whilst all the private facilities only had a 1.12% pregnancy rate. The **take-home baby rate for IUI's using partner sperm is only of 2.38%, which is a slight drop of 0.3% from the 2.63% figure reported for 2021, but a significant drop from the 4.27%** figure reported in 2020 and the **4.62%** reported in 2019. (Figure 4).



2.2.2 Intra Uterine Inseminations with donor sperm

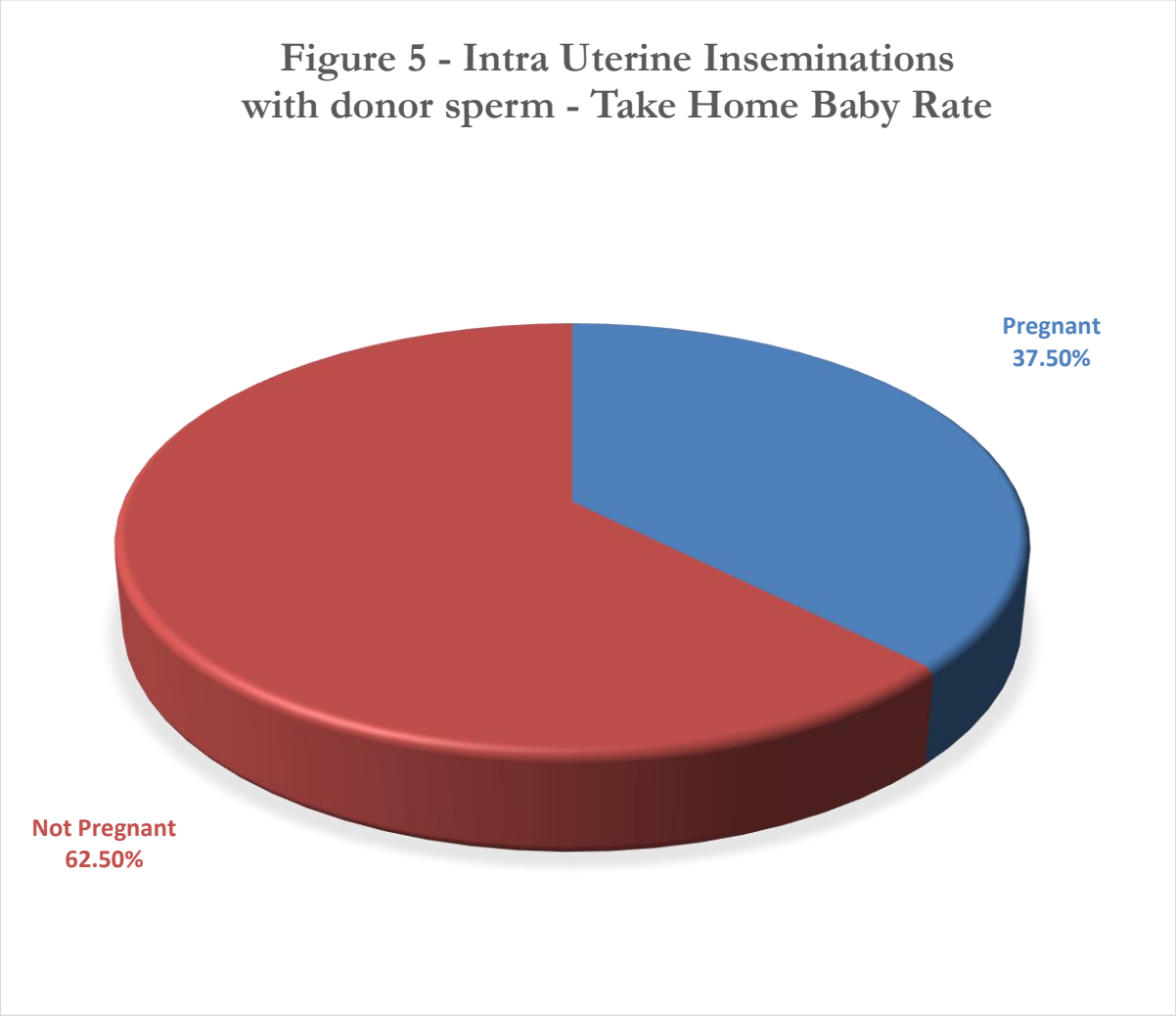
Use of third-party donation was allowed in Legislation in 2018, and Superintendent of Public Health issued a Licence to the MDH ART Clinic in May 2020 for the non-partner sperm distribution from abroad, to be used in open donations in Malta. However, it was only during 2021, that this activity started to be practiced at the MDH ART Clinic in September 2021.

The Authority in 2022 approved the use of twenty-three (23) donors, whose sperm would be used in Malta in one prospective parent/s only, after verifying that they are in line with Maltese Legislation. Eight (8) intra-uterine inseminations with donor sperm were held in 2022, by six (6) prospective parent/s, all at the MDH ART Clinic.

Four (4) heterosexual couples, one of which underwent the IUI process with donor sperm twice during 2022 and two (2) same-sex female prospective parents, one of which also underwent the IUI process with donor sperm twice during 2022, benefited from the IUI with donor sperm in 2022.

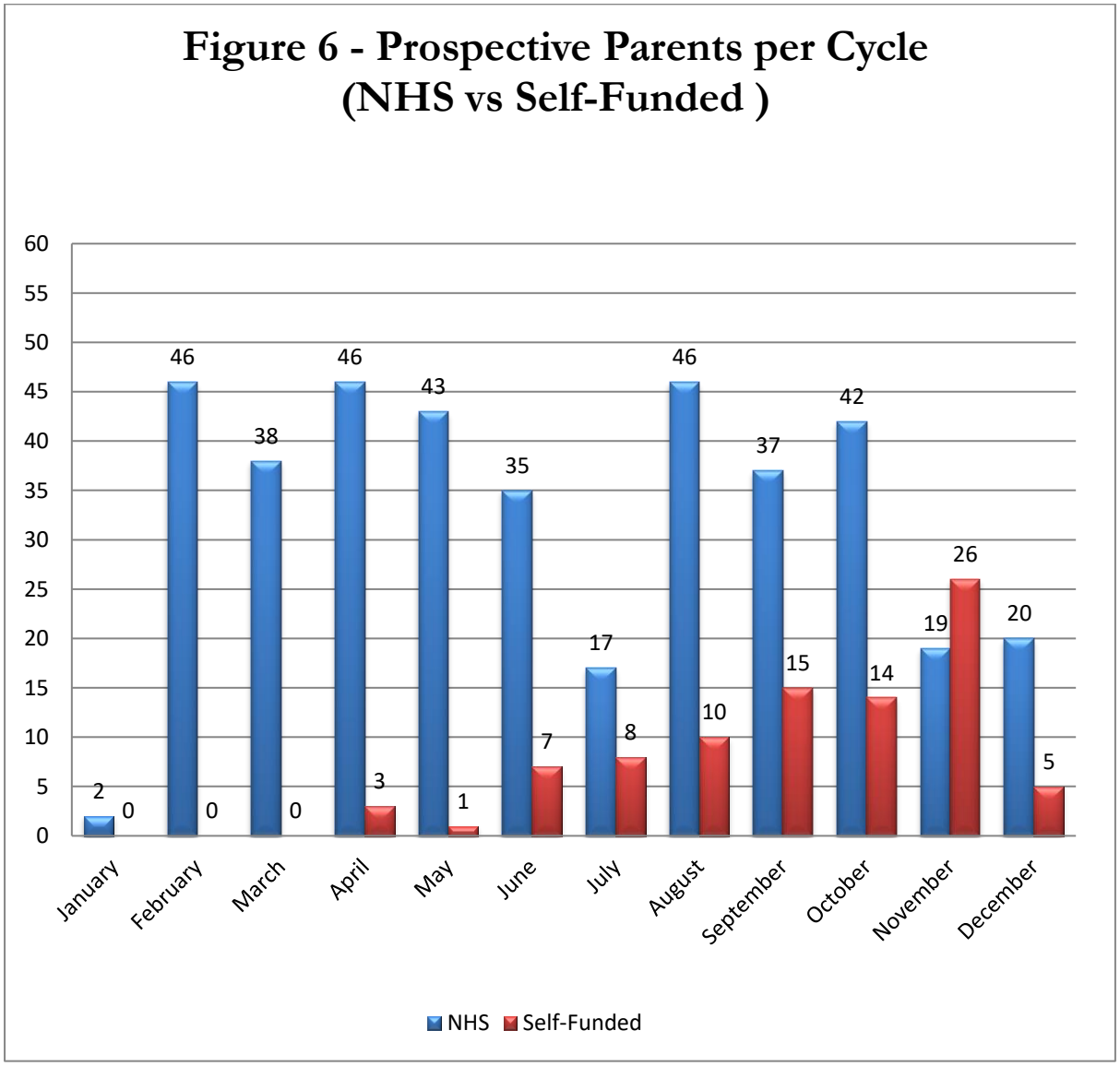
Out of the eight (8) procedures carried out, two (2) heterosexual prospective parents and one (1) same-sex couple became pregnant, all on their first attempt of IUI with donor sperm. Two prospective parents gave birth to two girls whilst the other couple is expecting to give birth to twins.

Thus, from data submitted to the Authority for 2022, **take-home baby rate for IUI's using donor sperm is of 37.50% which is 15.28% higher than the take-home baby rate of 22.22% recorded in 2021. This year's take-home baby rate from donor sperm is nearly sixteen times higher than the 2.38% success rate resulting from use of partner sperm.** (Figure 5).



2.3. Cycles and Treatment Cycles carried out by the Tissue Establishments. (IVF/ ICSI and Cryopreserved Embryo Treatment Cycles)

Three hundred and ninety-one (391) procedures (not treatment cycles) have been carried out at the ART clinic in Mater Dei Hospital (MDH), and eighty-nine (89) procedures were performed in the private sector at the HOPE Fertility and IVF facility, thus a total of **four hundred and eighty (480)** procedures were carried out in Malta in 2022 with an increase of 35% over the figures of 2021 wherein a total of 354 procedures were carried out. Two hundred and fourteen (214) were carried out in 2020. (Figure 6).



These **four hundred and eighty (480)** procedures were carried by four hundred and sixty-four (464) prospective parents who made use of their own gametes or embryos whilst the remaining sixteen (16) prospective parent made use of donor gametes, including in these sixteen procedures were three women in a same-sex female relationship who donated their oocytes to their partner. These oocytes were subsequently inseminated with donor sperm distributed from abroad and the embryo transferred in the women who was going to carry the embryo.

The number of ART procedures carried out in Malta in 2022 increased by 35% over the previous year, which is mainly attributed to the fact that in 2021 less procedures were carried out at the MDH ART Clinic as the clinic was increasing slowly its activity impacted by the Covid-19 measures in place. In 2022, the MDH ART Clinic increased its overall procedures by 18.13% over 2021.

The private sector saw a massive increase **of 87%** over 2021, this was mainly attributed to the fact that whilst the St James Conception Unit did only one batch of 23 procedures in 2021 and then ceased operation of treatment cycles. The new licenced private facility HOPE Fertility and IVF started offering its services as of April 2022, this service is being offered as an ongoing service and has increased over the months. This is contrary to what used to be offered in the private sector in the previous years where patients were batched, and cycles were done in three episodes during the year.

One also must point out that up to 2021, the private facility St James Conception Unit used to accept procedures of patients from four feeder clinics, namely, St James Hospital, St Clare's Clinic, Veduta Clinic and Melody Clinic. As of 2022, these clinics

are no longer offering their services in IVF/ICSI or embryo transfer procedures, and all patients in the private sector are own patients of HOPE Fertility and IVF.

Out of the eighty-nine (89) procedures carried out in 2022 at the private facility eleven (11) cases were prior approved to be a 'freeze all oocytes cycle' for fertility preservation. Twenty-five (25) other cases were reported as a freeze all embryo cycle after fertilisation of the oocytes were carried out thus all embryos had to be cryopreserved.

The reason for these twenty-five (25) 'freeze all embryos' cycles include, as the Embryologists reported on the EEART system, that twelve (12) cases of these cycles or 48% of all freeze all embryo cycles in the private sector were a result of endometrium issues. This was followed by five (5) of these cycles or 20% of all freeze all embryo cycles in the private sector were a result of a risk of Ovarian Hyperstimulation (OHSS) after fertilisation of the oocytes were carried out. Three (3) other cases or 12% were due to endometriosis. Another three (3) cases were due to various medical reasons amongst which were polyps and uterine treatment necessary between fertilisation and embryo transfer date. There was one request due to patient's health condition thus cycle was postponed, and all embryos were cryopreserved. The remaining freeze all embryo cycle resulted from an embryo with triploidic (maternal origin), this embryo had three pronucleus rather than two, a request was made to the Authority Board which was granted after seeking advice from the representative of the Obstetric and Gynae Association.

Thus, fifty-three (53) procedures could lead to a treatment cycle. Five (5) of the fifty-three procedures carried out did not have a successful fertilisation and the embryos arrested during the incubation phase.

There was one procedure not accounted for in the total of the eighty-nine procedures which was the result of four (4), day-3 embryos which were transferred from the MDH ART Clinic. As at the private facility the thaw embryo transfers are carried out by five-day embryos, the four embryos were further cultured up to day 5 but none of the embryos were viable to transfer thus no transfer was made and this could not lead to a treatment cycle.

This led to only forty-eight (48) cycles, thirty-three (33) IVF/ICSI cycles and fifteen (15) thaw embryo transfer cycles that resulted in a completed treatment cycle from which a pregnancy could result.

On the other hand, at the MDH ART Clinic from the three hundred and ninety-one (391) procedures carried out, eight were prior approved 'freeze all oocytes/ embryo cycle' oncology cases, three other cycles were for fertility preservation, which was approved for freeze all, thus three hundred and eighty cycles (380) could lead to a treatment cycle. However, thirteen of the procedures carried out did not have any oocytes for collection or had immature oocytes. Another three of the procedures carried out did not have a successful fertilisation and the embryos arrested during the incubation phase.

Thus, only three hundred and sixty-four (364) cycles resulted in a completed treatment cycle from which a pregnancy could result. Two hundred and twenty (220) of these cycles were thawed embryo transfer cycles

Out of the remaining one hundred and forty-four (144) fresh oocyte cycles carried out, the Embryologists of the MDH ART Clinic, reported on the EEART system

that in one hundred and thirty-seven (137) cycles, or 95.14% of cases, all embryos created had to be cryopreserved. The Embryologists reported on the EEART system that eighty-four (84) cycles or 61.31% of all freeze all embryo cycle were a result of High Oestradiol levels. Another twenty (20) cases or 14.60% were due to various medical reasons amongst which were polyps, fibroids, adenomyosis and uterine treatment necessary between fertilisation and embryo transfer date.

These were followed by twelve (12) cycles or 8.76% of all freeze all embryo cycles were a result of a risk of Ovarian Hyperstimulation (OHSS) after fertilisation of the oocytes were carried out, this was closely followed by eleven (11) or 8.03% other cases which required a freeze all embryo cycle due to High Progesterone levels. There were seven (7) cases or 5.10% which were postponed, and all embryos cryopreserved due to endometrium issues. The other three (3) remaining cycles or 2.2% of cycles that required a freeze all embryo cycles were due to endometriosis.

Thus, from the one hundred and seventy-one (171) fresh oocyte cycles, only seven (7) underwent fresh embryos transfer. This led to the fact that at MDH ART Clinic only two hundred and twenty-seven (227) out of the three hundred and ninety-one (391) cycles resulted in completed treatment cycle from which a pregnancy could result.

2.4. First Time/Repeated Cycles

Out of the 480 cycles carried out, patients reported a range of up to seven attempts of IVF/ICSI or embryo transfers. The majority, 58.54% of prospective parents (281) were undergoing the IVF/ICSI procedure for the first time. There were 23.96% of prospective parents (115) who were undergoing the cycle for the second time, 13.54% of prospective parents (65) for the third time, 2.71% of prospective parents (13) were undergoing their fourth attempt. Five (5) other prospective parents, 1.04% were undergoing their fifth attempt, whilst another couple had undergone their seventh cycles.

These figures are in line with the number of attempts, prospective parents are ready to go through to achieve a pregnancy as reported for in previous years, seven to eight attempts but show an increase over those reported for 2019 which had shown prospective parents going for a maximum of six attempts.

One also notes a considerable increase of prospective parents undergoing their third attempt over last year's figures. This year 13.54% whilst in 2021, there were 6.94% of prospective parents undergoing their third attempt. All other categories except the prospective parents undergoing first attempt registered an increase over last year.

Noteworthy is also the fact that there was a considerable decrease of 9.09% of prospective parents undergoing their first attempt at an IVF cycle. (Figures 7 and 8).

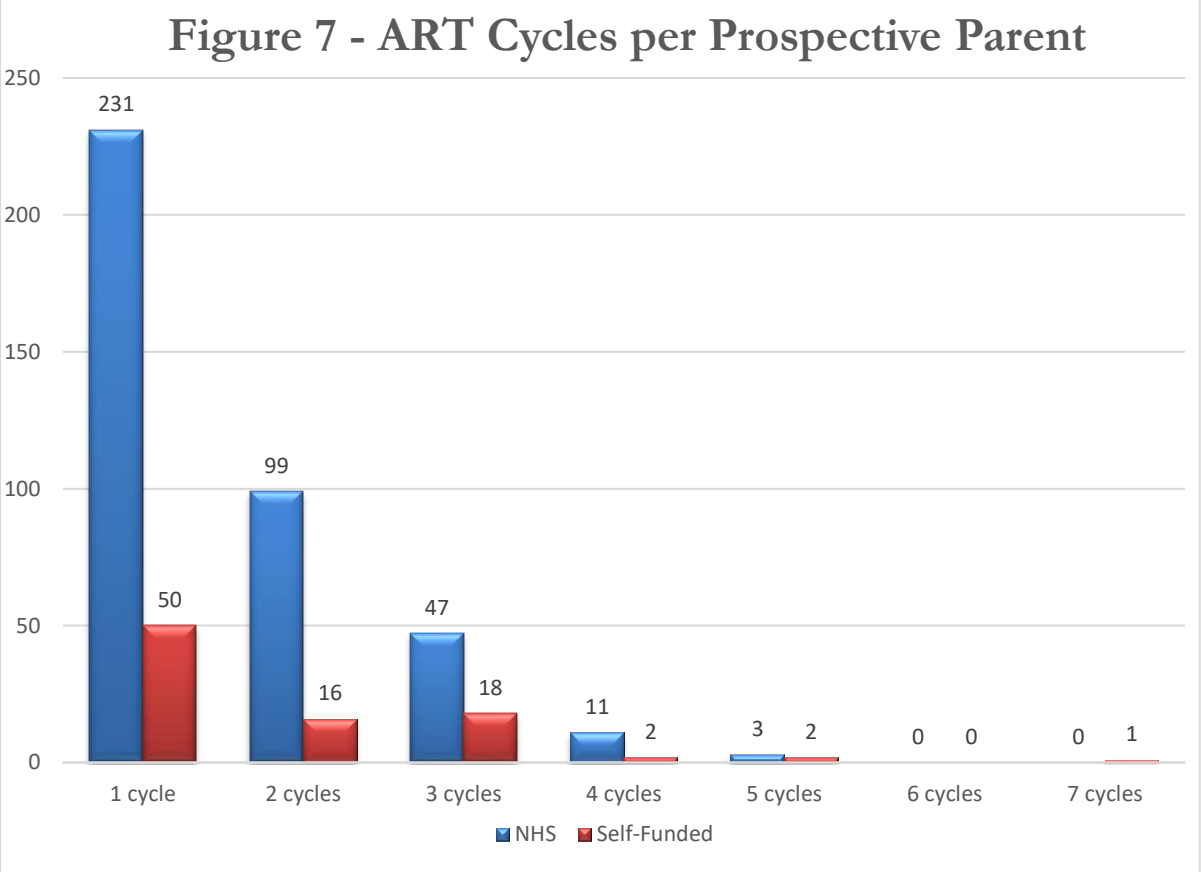


Figure 7 - ART Cycles per Prospective Parent
250
200
150
100
50
0
231
50
99
16
47
18
11
2
3
2
0
0
0
1
1 cycle
2 cycles
3 cycles
4 cycles
5 cycles
6 cycles
7 cycles
NHS
Self-Funded

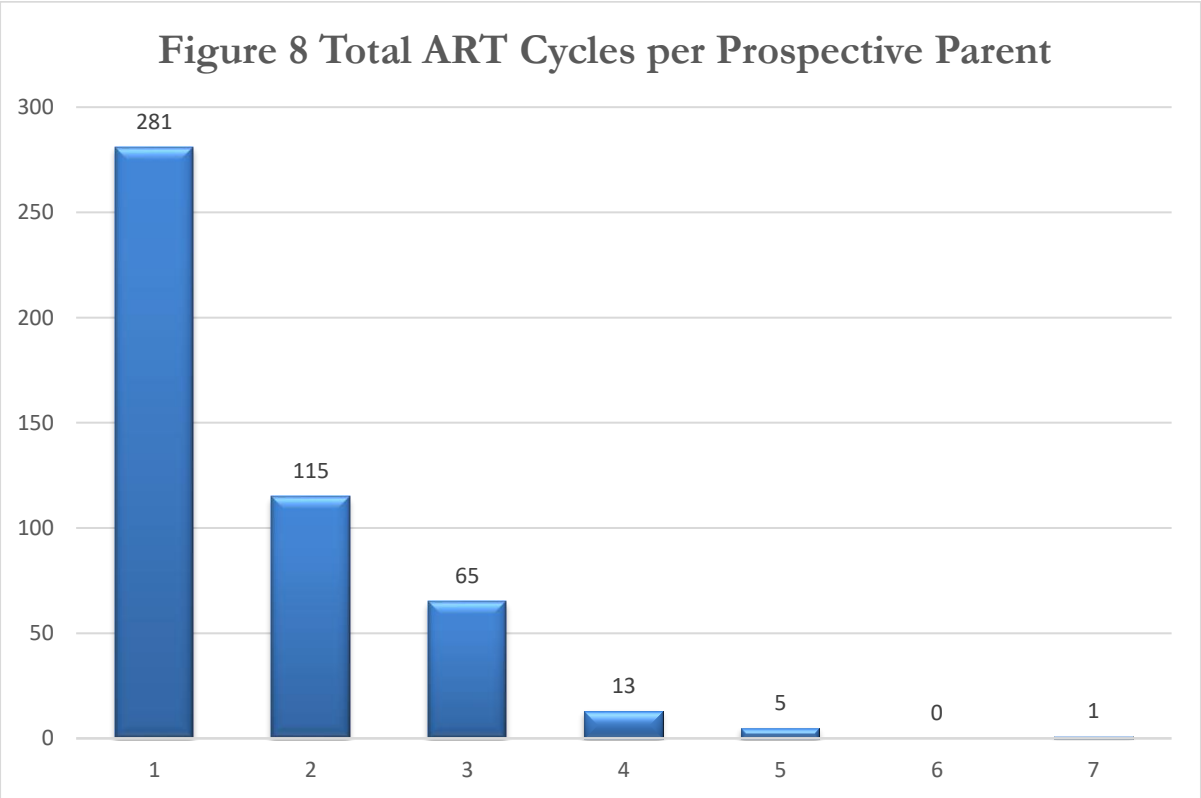


Figure 8 Total ART Cycles per Prospective Parent
300
250
200
150
100
50
0
281
115
65
13
5
0
1
1
2
3
4
5
6
7

3. DEMOGRAPHICS

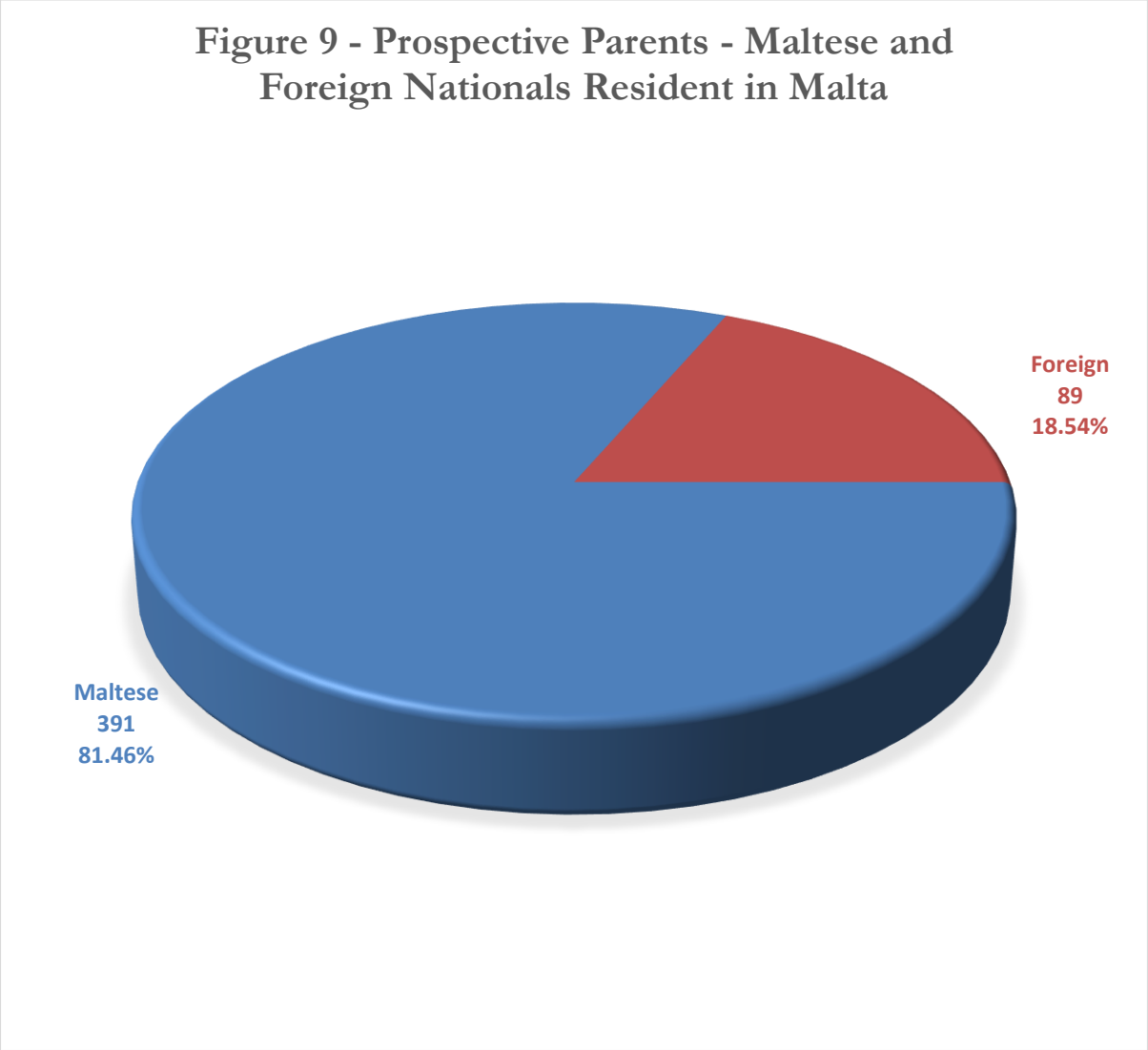
3.1. Nationality

Out of the 480 cycles performed this year, all except two were undertaken by Maltese Residents of different nationality. There were two foreign prospective parents(non-Residents) who came to Malta specifically to perform the IVF/ICSI procedure in the private sector as Medical Tourism. It was in 2019 the last time wherein the private sector had reported Medical Tourism procedures in the Fertility sector.

During 2022, we have again seen that the Maltese Residents seeking ART treatment registered an increase in foreign nationals living and working in Malta. In 2022, there were eighty-nine (89) foreign prospective parents, this registered an increase of thirty (30) foreign prospective parents over calendar year 2021 when fifty-nine (59) prospective parents sought the services in Malta and an increase of fifty-two (52) prospective parents over the thirty-seven (37) prospective parents registered in 2020.

The Majority of foreign nationals who are residents in Malta seeking treatment in Malta came from Italy. Other foreign nationals ranged from countries such as India, Philippines, Romania, England, Ukraine, Serbia, Pakistan, Syria, Russia, Spain, Greece, Brazil, Argentina, Albania, Ireland, Nigeria, Jamaica, Israel, Malaysia, Hungary, Morocco, Iran, Czech Republic, Colombia, Macedonia, Germany, Bulgaria, and Moldova amongst others.

These amounted to **18.54%** of all cycles carried out, which registered a 1.87% increase over the 16.67% of cycles carried out by foreign nationals' resident in Malta in 2021. (Figure 9).



3.2. Regions

As reported in previous years, the overall majority of prospective parents 43.13% or two hundred and seven (207) prospective parents who had undergone fresh oocytes cycles of IVF/ICSI and embryo transfer procedures in 2022 reside in Central Malta, followed by 35.83% or one hundred and seventy-two (172) prospective parents who reside in Southern areas of Malta. 15.21% or seventy-three (73) prospective parents reside in the Northern part of the island, while the remaining 5.42% or twenty-six (26) prospective parents reside in Gozo. The other two (2) prospective parents reside abroad.

These figures show a decrease in prospective parents from the Central part of Malta by 4.95% over previous year, from Gozo by 3.23% and prospective parents from the Northern part decreased by 1.61% over last year's figures.

This was reflected in an increase of 9.39% by the prospective parents residing in the Southern part of the island, and a 0.42% increase in the medical tourism sector (Figures 10, 11 and 12).

Figure 10 - Distribution by Region - NHS

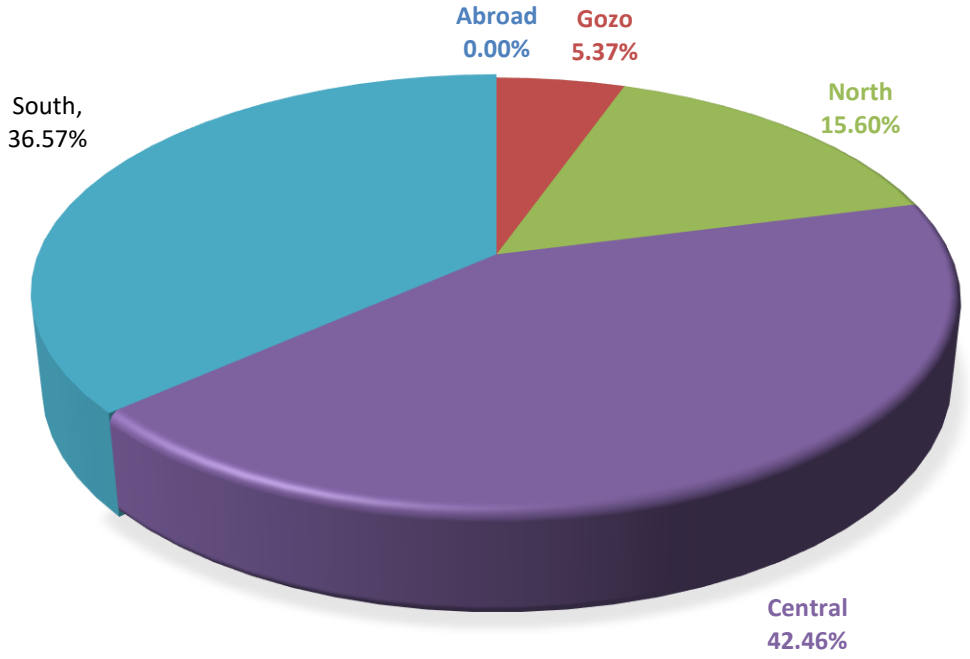
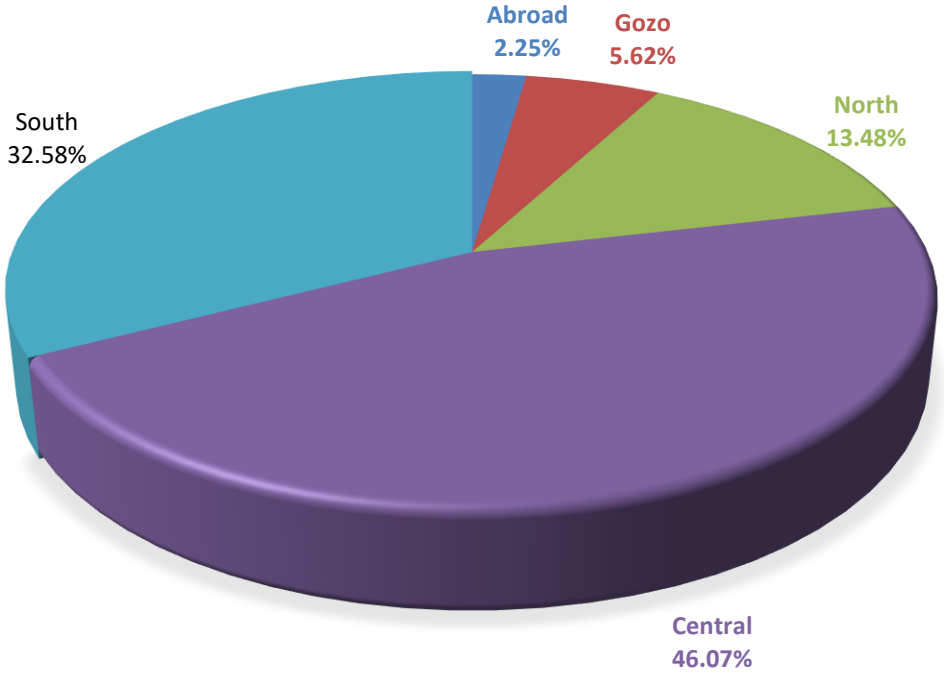


Figure 11 - Distribution by Region - Self-Funded



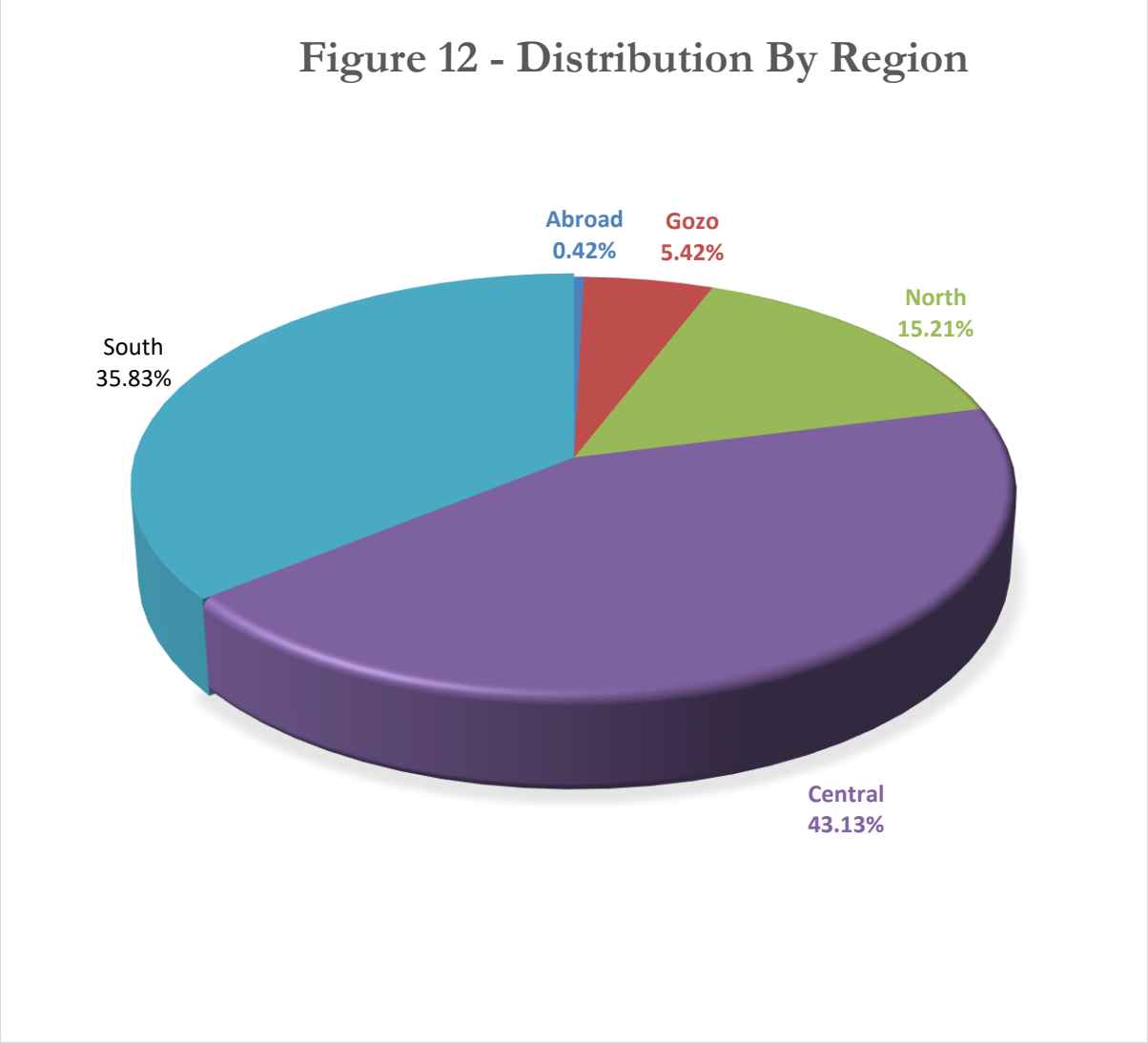


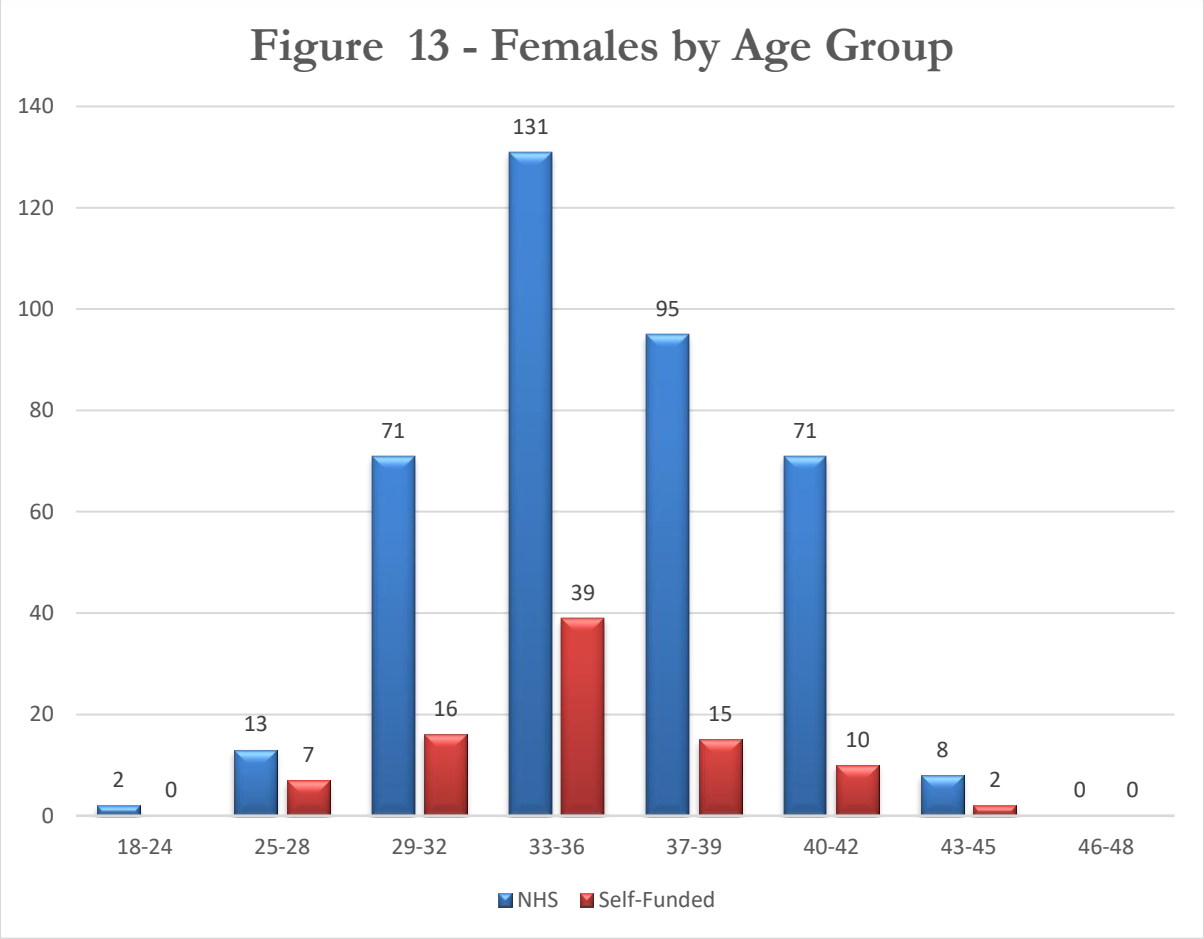
Figure 12 - Distribution By Region
Abroad
0.42%
Gozo
5.42%
North
15.21%
South
35.83%
Central
43.13%

3.3. Maternal Age

In line with the Embryo Protection Authority's Protocol as amended in July 2022, in Malta, women falling within the stipulated age bracket of 18 and 48 are eligible to undergo ART Treatment, the extension of maximum age from 42 to 48 years is applicable to women who make use of donated oocytes, women who have previously cryopreserved embryos and are undergoing an Embryo Cryopreservation/Thaw Cycle and women who had previously cryopreserved their oocytes.

During 2022, the youngest women undergoing a procedure was an eighteen (18) year old undergoing fertility preservation, whilst the oldest woman was a forty-four-year-old who underwent an embryo transfer cycle. All women who had embryo cryopreservation cycles were still much younger than the maximum age of 48.

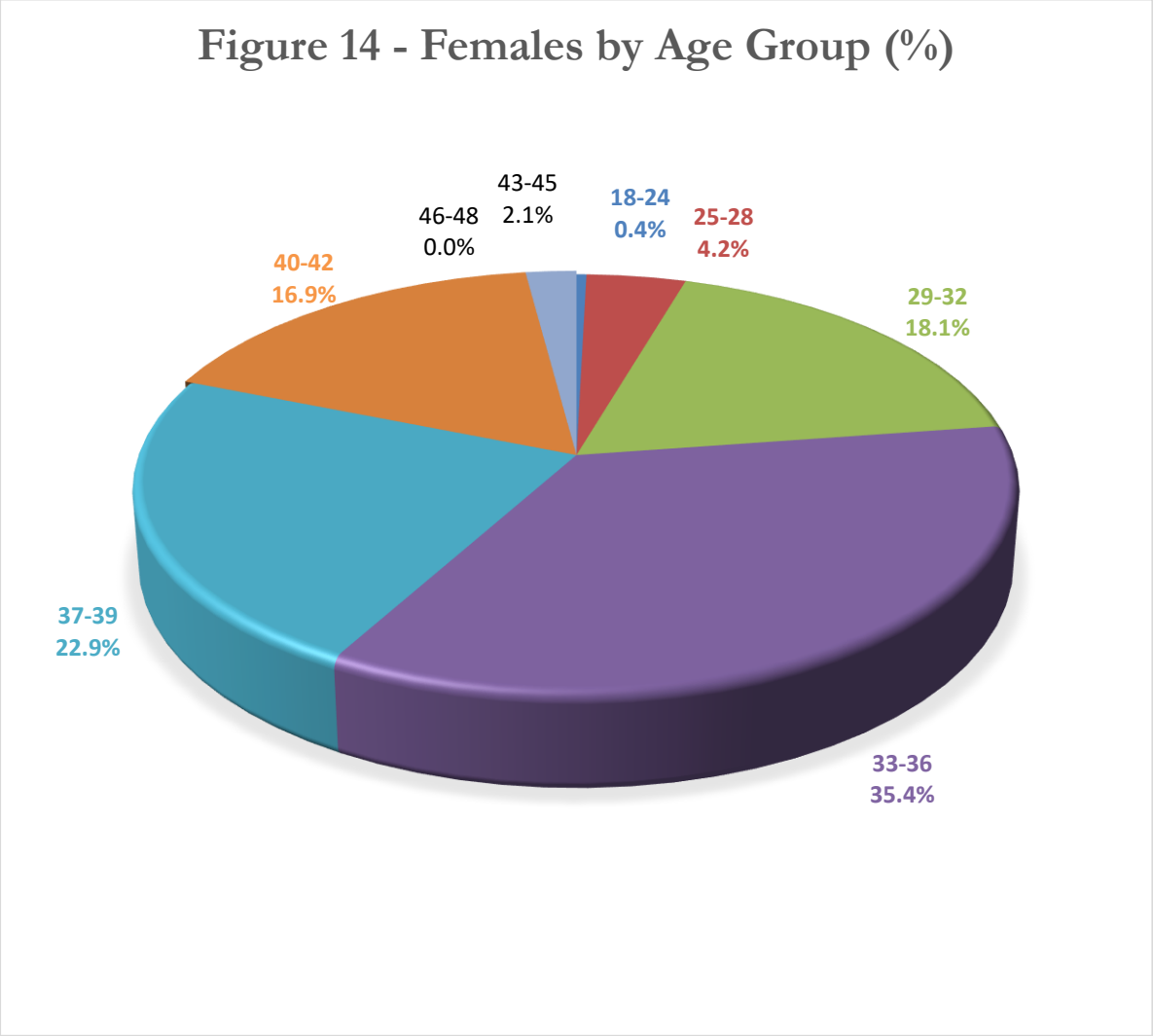
Three women (3) who made use of the six months extension granted by the Authority were aged 43 when undergoing their procedure. There has been a distribution of procedures across all age brackets, as can be noted from the chart hereunder (Figure 13).



As for the past eight years, the largest number of female patients, one hundred and seventy (170) females (35.4%) undertaking procedures throughout 2022 were aged between 33 and 36. The second largest age group as per previous years, was for female patients aged 37-39, with one hundred and ten (110) females (22.9%), while eighty-seven (87) females (18.1%) followed closely in the 29–32-year-old bracket. These were followed by eighty-one (81) female patients (16.9%) aged between 40-42.

Twenty (20) female patients (4.2%) were aged between 25 and 28 years. Ten (10) female patients who benefited from the age extension and the change in legislation

were aged between 43 and 45 years. And two (2) patients were aged between 18 and 24 years. (Figure 14).



Noteworthy is the fact that in 2022 both the public and private clinics registered the highest number of female patients in the 33 to the 36 years old bracket. Whilst the public MDH ART Clinic had a 33.50% the private Clinic HOPE Fertility and IVF registered a 43.82% in this age bracket.

Figures above also show that the majority of patients in both the private and public clinics were aged between 33 to 45 years. In the public MDH ART Clinic these amounted to 78.01% of all patients seeking treatment on the NHS, whilst in the private HOPE Fertility and IVF these registered a 74.16% of all patients seeking ART treatment in the private sector.

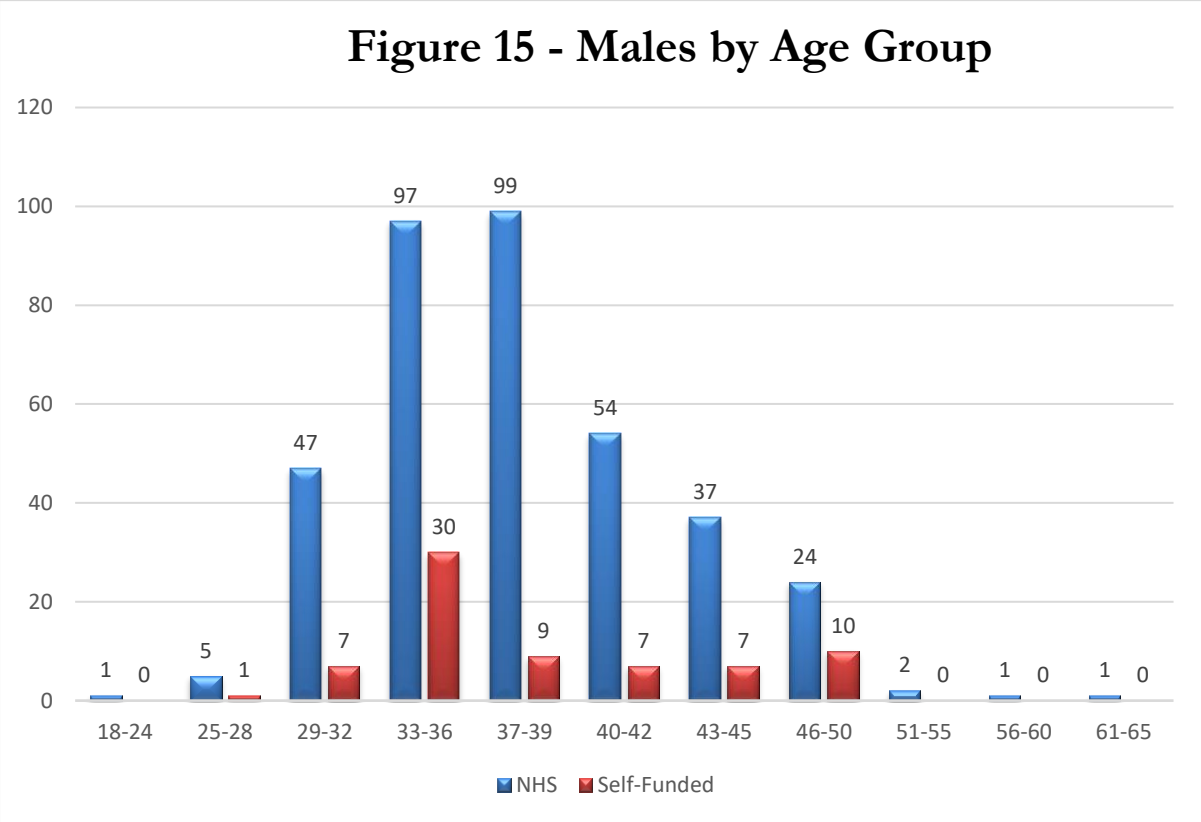
This is also reflected in the mean age of the women who underwent ART procedures in Malta in 2022. The mean age of women in the public MDH ART Clinic was of 35.45 years, whilst the mean age of women in the private HOPE Fertility and IVF was of 34.69 years.

There has been a drop of 2.3% in the age group of females aged between 40 and 42 years, and a drop of 2.6% in the age group of women aged between 29 and 32. There was also a slight drop in the age group of women aged between 18 to 24 and in the age group aged 43 to 45.

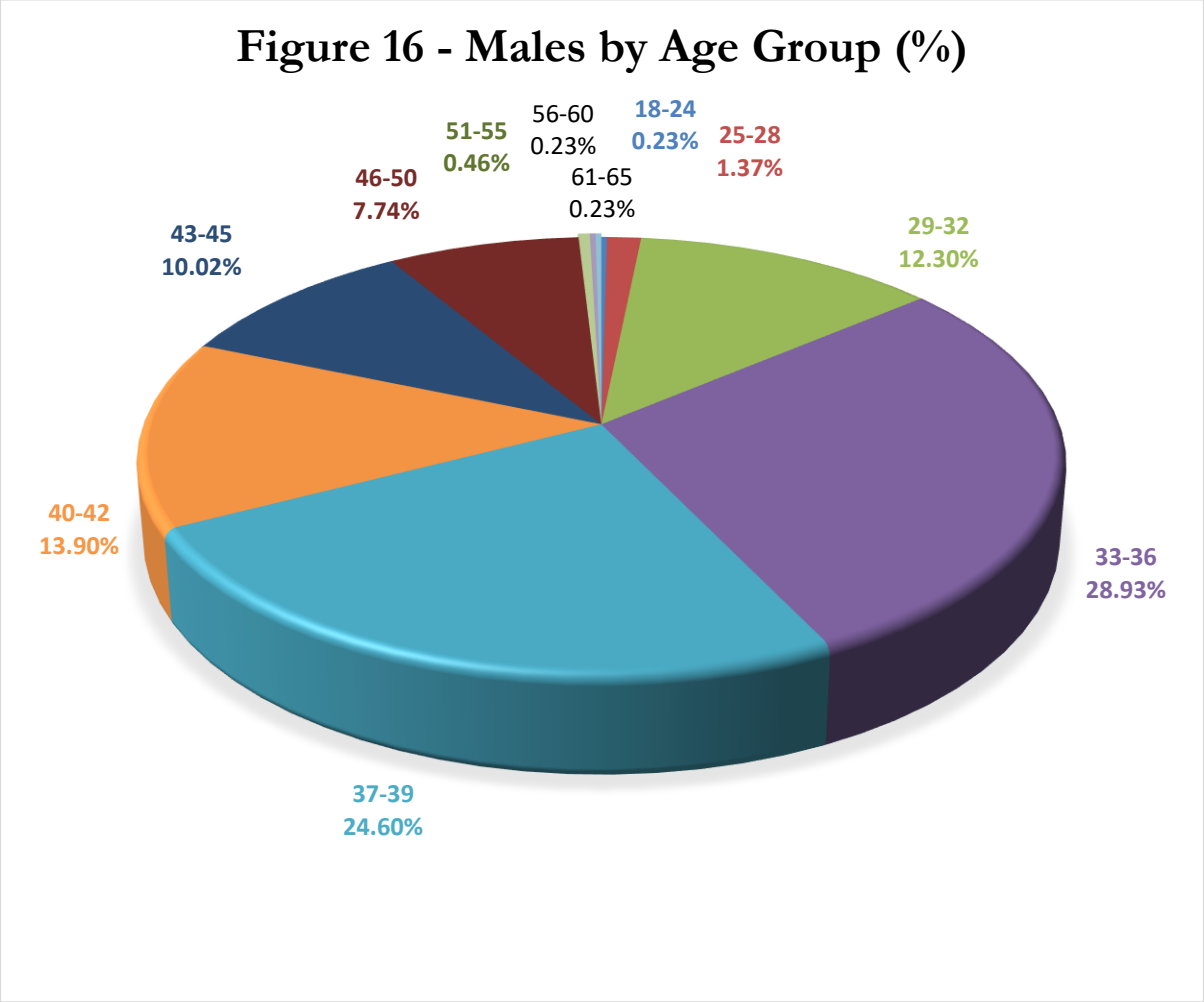
Conversely, the groups with the largest majority of females namely the 33- to 36-year-olds and the 37 to 39 years old registered an increase over 2021. An increase of 3.2% was registered in the age bracket of 33 to 36 years over the previous year. An increase of 1.3% was registered by women aged between 37 to 39 years old.

3.4. Paternal Age

As with the female patients, the largest number of male patients, which amount to one hundred and twenty-seven (127) males or 28.93 % of males undergoing procedures was in the 33–36-year-old bracket, while one hundred and eight (108) males equivalent to 24.6% were aged between 37 and 39. The third largest age group with a 13.9% of males consisted of sixty-one (61) males in the 40- to 42-year-old bracket. The age group of males aged between 29-32 years was the fourth largest age group with fifty-four (54) males or 12.3% of males. Forty-four (44) other males were reported to be in the 43 to 45 age brackets registering a 10.02% of males, while thirty-eight (38) patients or 8.66% of male patients were aged 46 years and over. The remaining seven (7) males, or 1.6% were under the age of 29. (Figures 15 and 16).



Noteworthy is the fact that while in 2017 the oldest male was in the 51-55 age bracket, in 2018, 2019 and 2020 the oldest male was in the 56-60 age bracket, with the oldest male being 58 years undergoing a cycle at the public facility. In 2021 and 2022 the oldest male was registered to be 61 years and as with previous years was undergoing a cycle at the public facility.



In 2022, same as their female partners, there was a significant increase in the age groups with the majority of males, aged between 33 to 36 years and 37 to 39 years. The largest registered increase was of 3.73% in the age group of males aged between 33 and 36 and an increase of 0.3% in the age group between 37 and 39 years.

All males over 50 years of age were registered in the public tissue establishment. There was also an increase in the age groups aged 46 to 65, which registered an increase of 1.26% over the previous year.

There was also a decrease of 3.0% in the age group of males less than aged 29 to 32 years. Another 1.9% decrease was registered in male patients aged 40 to 42 years.

Same as in 2019, 2020 and 2021, this year the youngest male is reported to be 24 years old.

4. INFERTILITY

4.1. Duration of Infertility

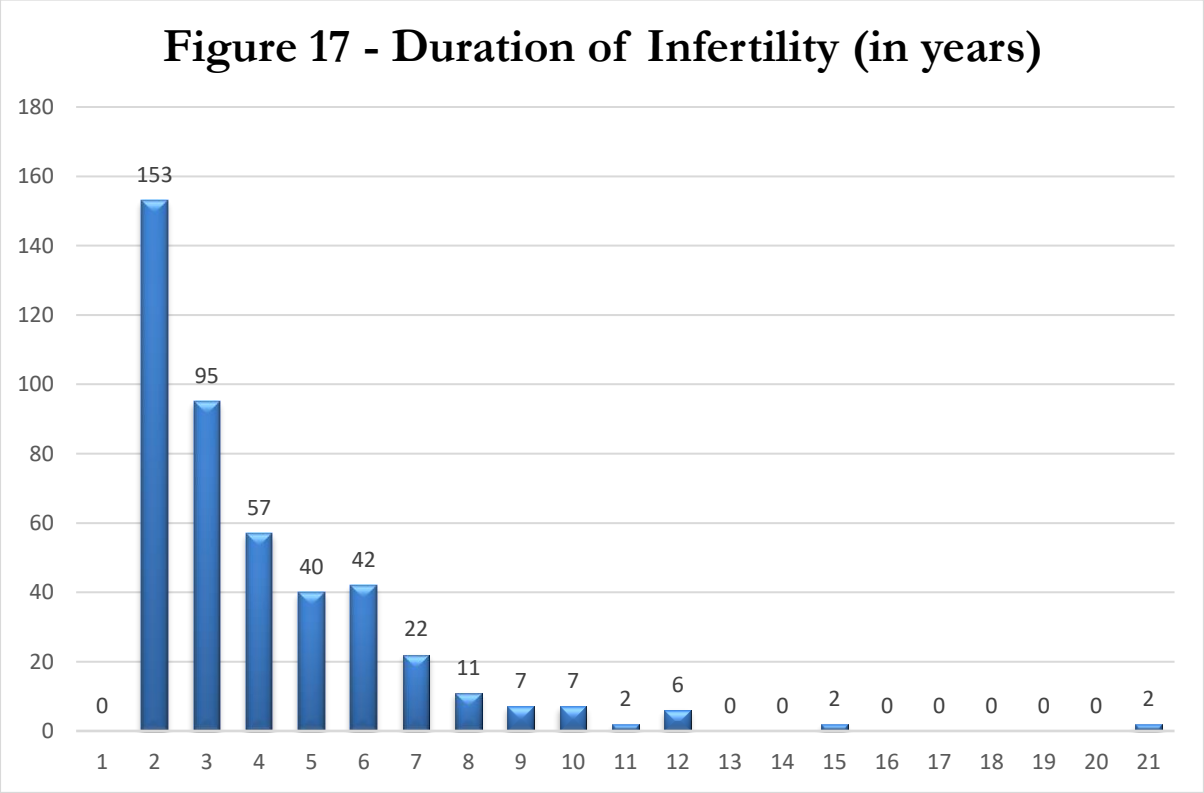
There was a significant amount of variability in the reported duration of infertility amid prospective parents undertaking procedures in 2022. For the very first time a duration of twenty-one (21) years, was reported at the MDH ART Clinic by a foreign resident couple who sought treatment in Malta. The maximum duration reported in 2018 was that of seventeen (17) years, this went down to fifteen (15) years in 2019. The maximum duration report in 2020 and 2021 was that of fourteen (14) years.

For the very first time, also the minimum duration of years reported by the prospective parents was of two years in both the public and the private facility. In previous years, the reported minimum duration in the private sector was that of one year.

Noteworthy is the fact that prospective parents seeking treatment at the private facility reported a maximum infertility duration of up to eight (8) years, whilst all those patients with a duration of nine (9) years and over sought to receive treatment at the MDH ART Clinic.

The Majority of prospective parents undergoing medical assisted procreation in 2022 were reported to have a duration of infertility between two to five years. One hundred and fifty-three (153) prospective parents reported to be infertile for two years, ninety-five (95) prospective parents for 3 years, fifty-seven (57) prospective

parents for 4 years, forty (40) prospective parents for 5 years and forty-two (42) prospective parents for 6 years. Forty-seven (47) other prospective parents reported to be infertile between 7 and 10 years. Only eight (8) prospective parents reported being infertile between 11 and 12 years. Two (2) other prospective parents reported being infertile for 15 years whilst another two (2) reported being infertile for twenty-one years. All couples reporting a duration of nine years and over received treatment at the MDH ART Clinic (Figure 17).



To be eligible for treatment on the NHS, a couple must declare being infertile for at least two years if there is no exceptional case to receive treatment before. In fact, all prospective parents who self-funded their treatment declared 2 years or more of infertility, thus were eligible to undergo treatment on the NHS, apart from those

prospective parents who underwent treatment as part of medical tourism. Most prospective parents (94.67%) self-funding their treatment have reportedly been infertile for 2 to 4 years, this is a massive increase over the 38.89% of prospective parents reported in 2021. The remaining 5.33% of prospective parents self-funding their treatment has reportedly been infertile for 5 years or more with a substantial decrease of 39.11% on the previous year, which is reflected in the increase in the two to four years bracket. In the figures quoted above, the women who underwent retrieval for fertility preservation, same-sex female couples and single women, are not included.

Same as the self-funded treatments, the majority of prospective parents (63.07%) who applied to undergo IVF/ICSI treatment on the NHS declared being infertile for 2-4 years, registering a 3.96% decrease from the previous year. Seventy-nine (79) prospective parents, or (21.30%), have declared being infertile for 5-6 years, an increase of 0.22% over last year. Fifty-eight (58) prospective parents (15.63%), an increase of 4.28% over 2021, have been infertile between seven and twenty-one years.

Noteworthy is the fact that two hundred and seventy-two (272) prospective parents, (73.31%) of total prospective parents undergoing treatment on the NHS, reported to have been infertile for up to 5 years. This shows a decrease of 5.61% from the previous year, wherein 78.92% of the prospective parents had been reported in 2021. In the figures quoted above the women who underwent retrieval for fertility preservation, same-sex female couples and single women, are not included (Figure 18).

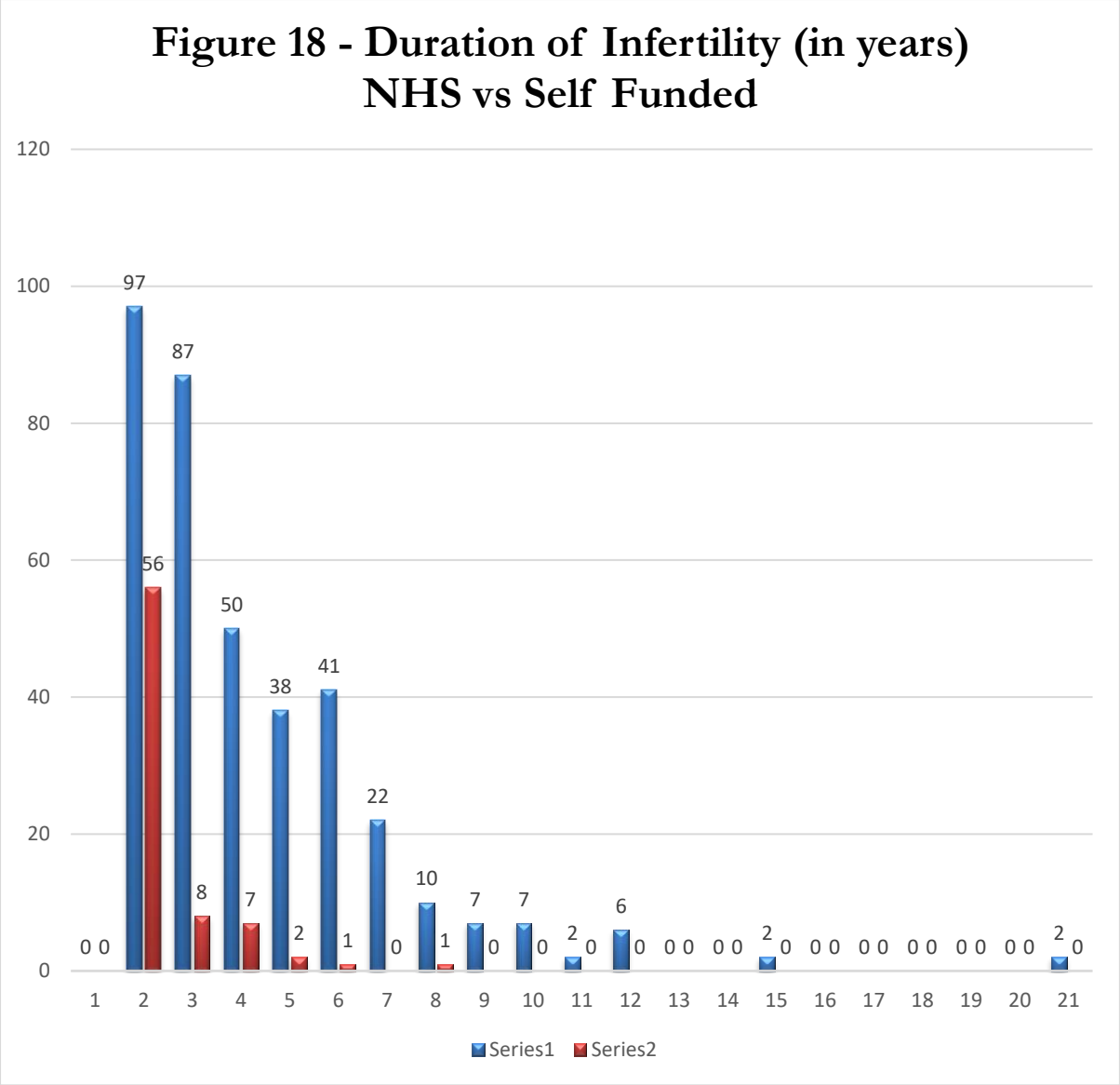


Figure 18 - Duration of Infertility (in years)
NHS vs Self Funded
120
100
80
60
40
20
0
97
56
87
8
50
7
38
2
41
1
22
0
10
1
7
0
7
0
2
0
6
0
0 0
0 0
2
0
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1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Series1
Series2

4.2. Classification of Infertility

Up to 2021, IVF/ICSI procedures were offered on the NHS free of charge by the Government to prospective parents who have no children (Primary Infertility), or to those who have children from a previous relationship (Secondary Infertility).

With the introduction of changes to the Embryo Protection Act in 2018, prospective parents who had cryopreserved embryos stored in tissue establishments in Malta were also added to the NHS entitlement criteria to undergo other treatment cycles that make use of their cryopreserved embryos, irrespective if they already have previous children from the same relationship or not. Prospective parents who had embryos cryopreserved abroad, were also allowed to bring them to Malta to have their transfer in Malta if they had no previous children.

The Authority during 2021, had brought up the issue that the NHS criteria as issued by the Chief Medical Officer's office, which allowed women who underwent IVF procedures and had a live birth but did not have frozen embryos, to be entitled to have other cycles if they presented themselves at the clinic with a new partner due to various reasons of separation from the partner, they had undergone IVF with, might need to be changed.

The Authority had raised the issue that the entitlement criteria might be discriminating against the stability of the family, as if the same woman mentioned above had remained in her relationship she would not have been entitled for other cycles. Thus, whilst newly formed families (different partners) were being given the chance, those family units who remained stable were being denied this opportunity.

The Authority also pointed out that this change did not require change in legislation, but it only required change in entitlement criteria issued by the CMO's office, thus it was much easier to be introduced.

This request made by the Authority was approved, and the necessary changes to the entitlement criteria were issued following the publication of the new changes to the Embryo Protection Act in July 2022. The new entitlement criteria now allow the prospective parents to have up to two children for free on the NHS, any remaining cryopreserved embryos will also continue to be transferred for free on the NHS.

The majority of prospective parents, four hundred and twenty-six (426) prospective parents (94.67%) who have applied for medical assisted procreation treatment in both the NHS and private sector in 2022 suffered from Primary Infertility, an increase of 1.6% over 2021. Noteworthy is the fact that five (5) prospective parents who reported secondary infertility, as they already had a child from the same relationship, received treatment in 2022. Three (3) of these prospective parents received treatment for the very first time on the NHS whilst the other two prospective parents self-funded their treatment.

The total of prospective parents who reported secondary infertility in 2022 has increased to twenty four (24) prospective parents or 5.35% of prospective parents undergoing treatment. (Table 1).

Table 1. Classification of Infertility

Classification of Infertility	NHS	Self-Funded	Total	%
Primary	357	69	426	94.67%
Secondary - Child from Same Relationship	3	2	5	1.11%
Secondary - Female has child from Previous Relationship	11	1	12	2.67%
Secondary - Male has child from Previous Relationship	4	3	7	1.55%
Secondary - Both Partners had children from Previous Relationship	0	0	0	0.00%
Total	375	75	450	100.00%

Noteworthy to point out, is that in 2022, there were seven (7) males, four who received treatment on the NHS at the MDH ART Clinic and three who received treatment in the private sector, that reported to have secondary infertility as they already had a child from a previous relationship. This contrasts to figures reported in 2021 where no males who resorted to treatment, had children from another relationship. Consistent with reporting from 2021, there were more females, twelve (12) women, who already had a child from a previous relationship who resorted for treatment in 2022 with a new partner.

4.3. Indication for Infertility Factors

The Authority gathers data on what the contributing factor of infertility for each prospective parent is. These consist of Female factor only, Male factor only, Female and Male factor, and Idiopathic (unexplained) infertility.

The majority of prospective parents who sought treatment in 2022 (39.91%) who were undertaking IVF/ICSI procedures, not embryo transfer cycles, suffered from Female factor only infertility. These were followed by prospective parents (26.75%) suffering from Male factor only. Prospective parents (21.93%) reported that they were facing idiopathic infertility, while the remaining 11.40% reported that they were suffering from both Female and Male factor.

Noteworthy to bring to attention is the fact that in 2022, there was a significant decrease of 4.4% in the group of patients who reported suffering from Female and Male infertility over the figures reported in 2021. This is consistent with figures of previous years that also showed a drop in these infertility factor bracket. There was also reported a decrease in another classifications of infertility, the group of prospective parents who suffered from Male only infertility registered a drop of 1.85%.

These drops are then reflected in the increase of 3.53% in the group of prospective parents who suffered from unexplained or idiopathic infertility, this group is showing an increase year over year. An increase of 2.71% was also registered in the Female only infertility group. (Figures 19 and 20).

Figure 19 - Indication for Infertility Factors NHS - Self funded

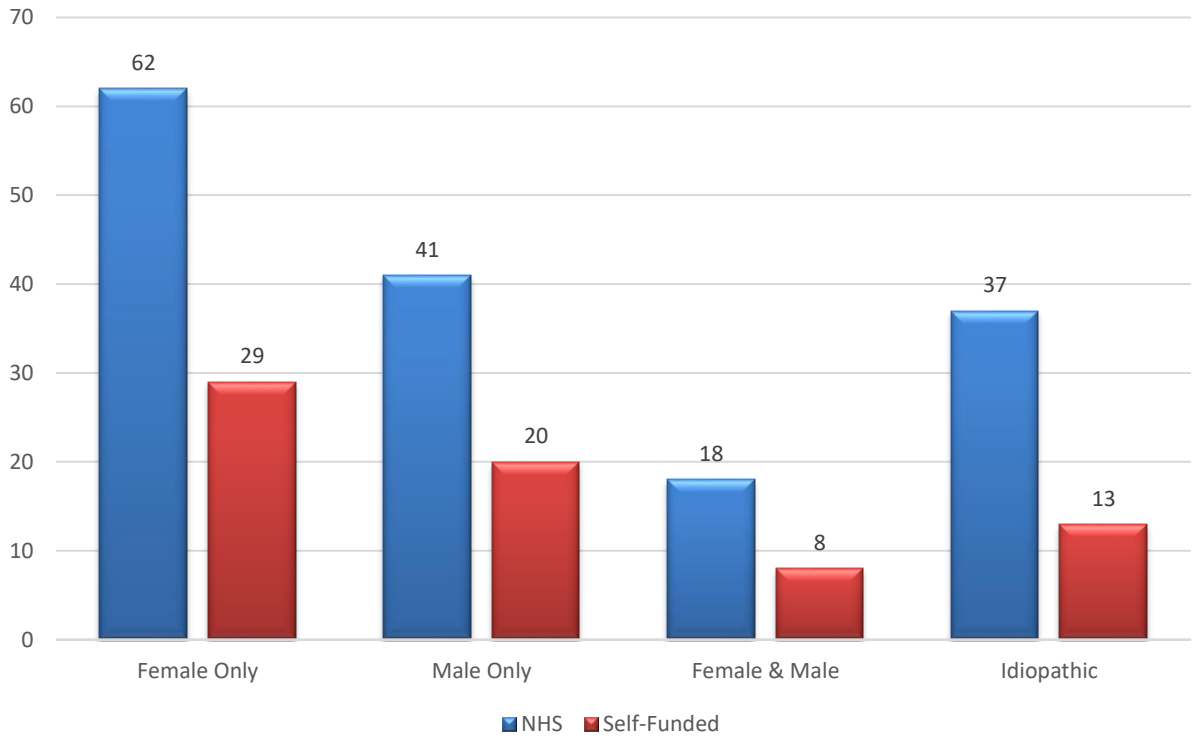
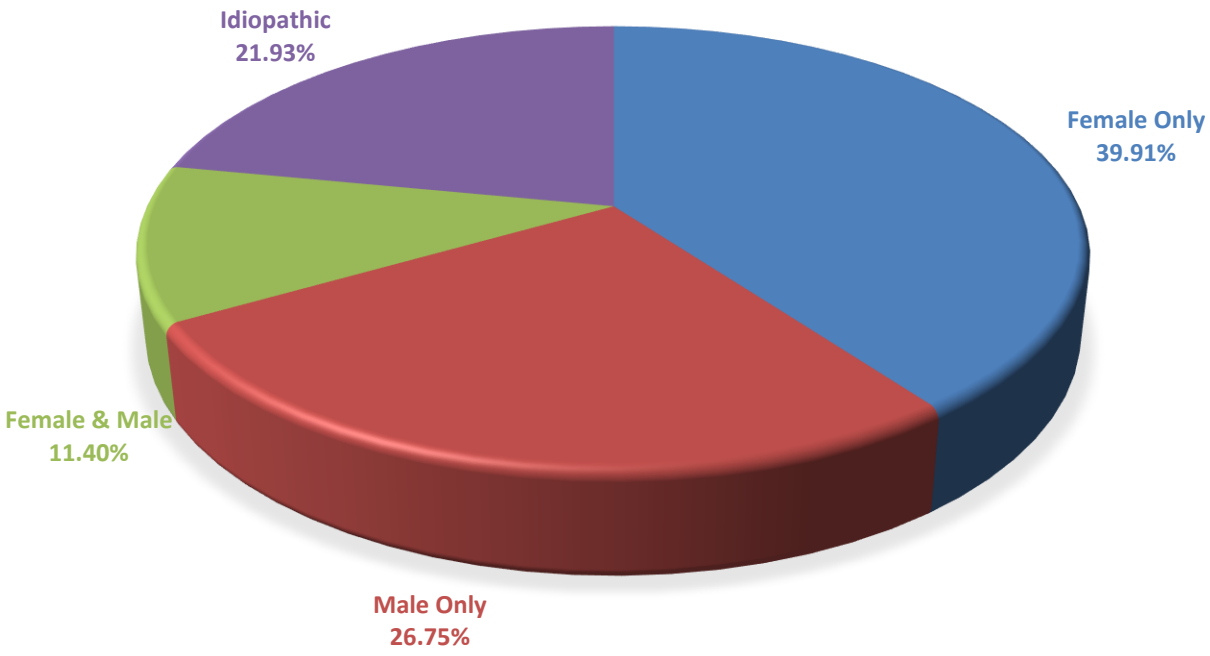
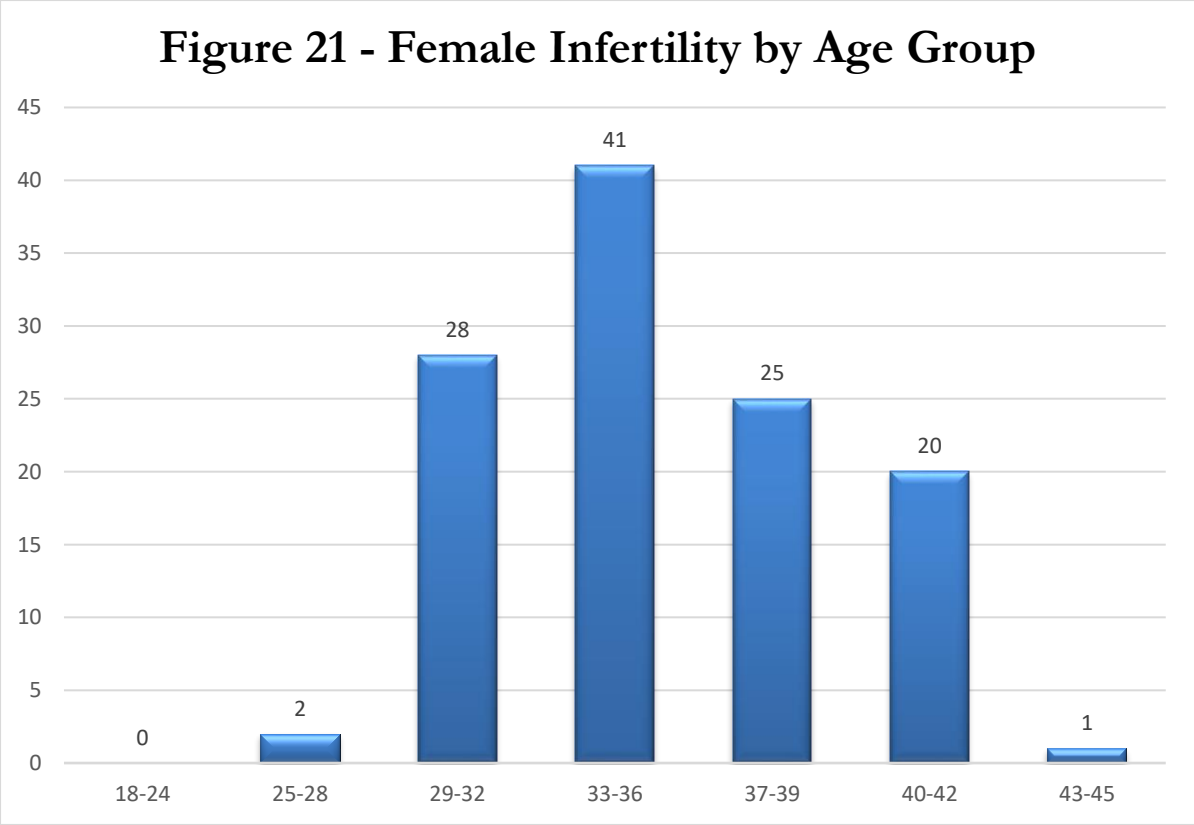


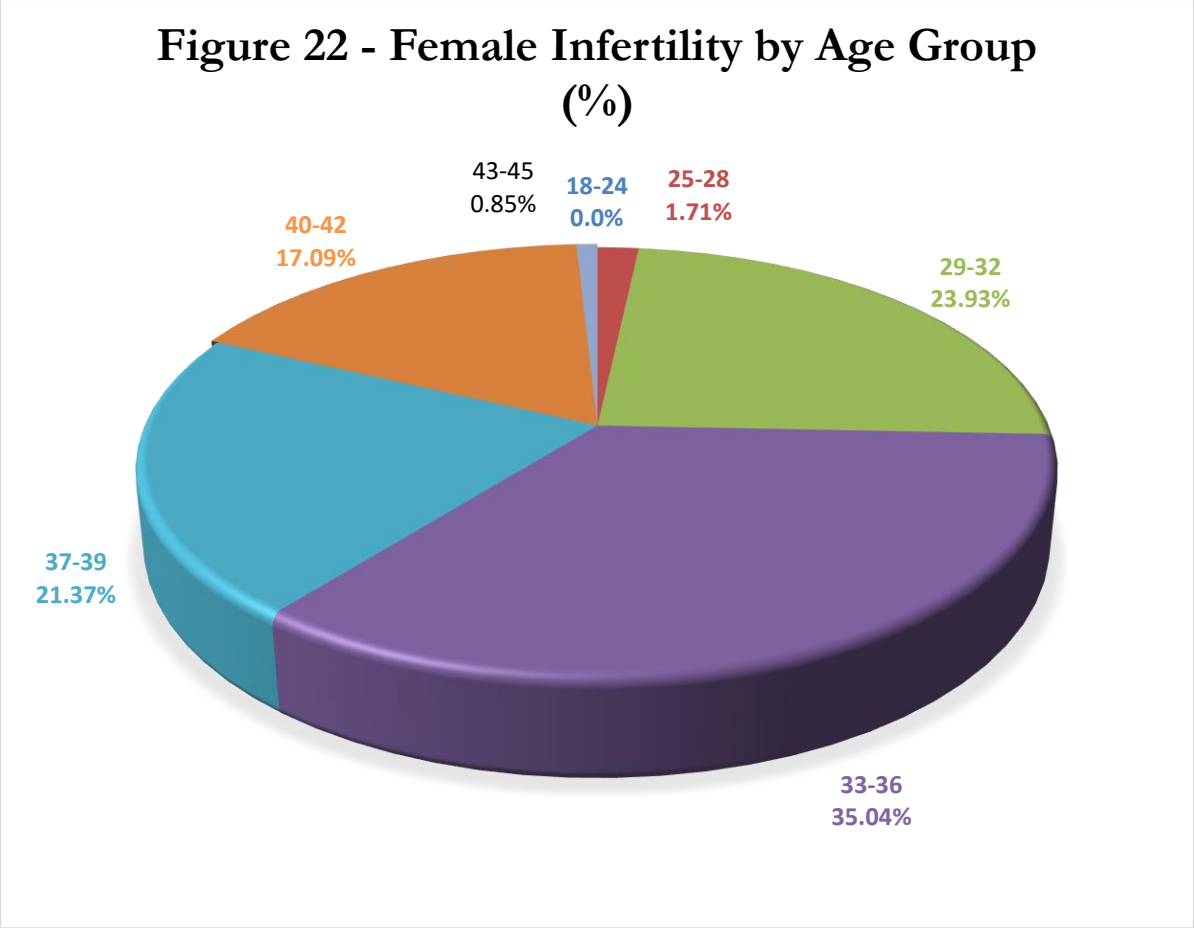
Figure 20 - Indication for Infertility Factors (%)



From those prospective parents diagnosed with Female factor infertility, the largest group (35.04%) were in the 33–36-year-old bracket, this age bracket has registered an increase of 8.14% over the figures of 2021 and gained back the drop of 7.50% it had registered in 2021 over the figures of 2020. This is followed by the age group of 29–32-year-old females at 23.93%. This age group has registered a decrease of 1.97% over figures reported for 2021.

A further decrease of 4.53% was registered in females aged between 37 and 39 years who registered 21.37% compared to the 25.9% of 2021. The age group bracket of females between 40-42 years registered an increase of 1.39% from 15.7% to 17.09%. (Figures 21 and 22).





From those prospective parents suffering from Male factor infertility, same as with the females, the largest group (37.93%) were reported in the 33–36-year-old bracket with a very significant increase of 15.63% over previous year figures, this age group has been registering increase year over year. This is followed by males in the 37 to 39 age brackets at 18.39%, this age group registered a drop of 11.41% from figures reported in 2021. Males in the age bracket of 40 to 42 years also reported an 18.39% of all males suffering from Male factor infertility, this is an increase of 4.59% over the figures reported in 2021. A significant increase of 4.9% was also registered in the males aged between 43-45. It is also noteworthy to point out that males who together with their female partners had undergone treatment with the use of donor sperm, due to male factor infertility, came from all age brackets ranging from 28 years to 50 years. (Figures 23 and 24).

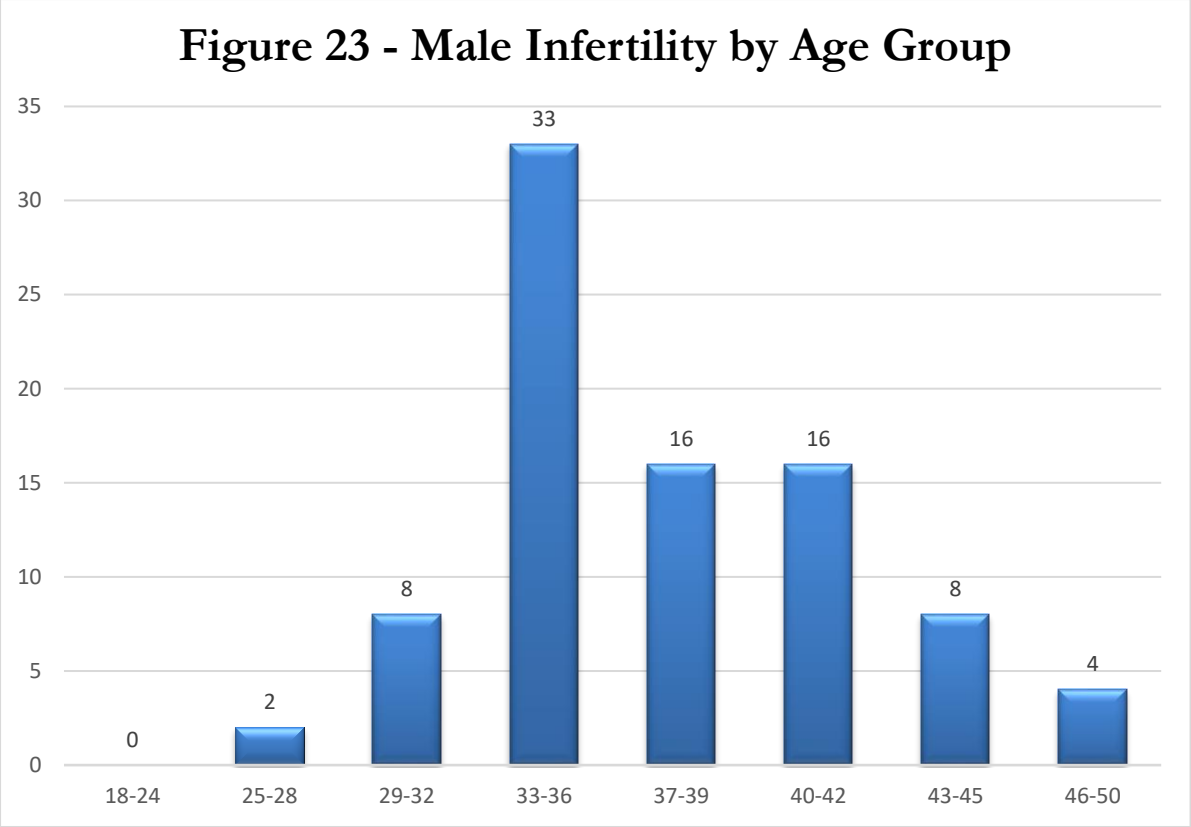


Figure 23 - Male Infertility by Age Group
35
30
25
20
15
10
5
0
0
2
8
33
16
16
8
4
18-24
25-28
29-32
33-36
37-39
40-42
43-45
46-50

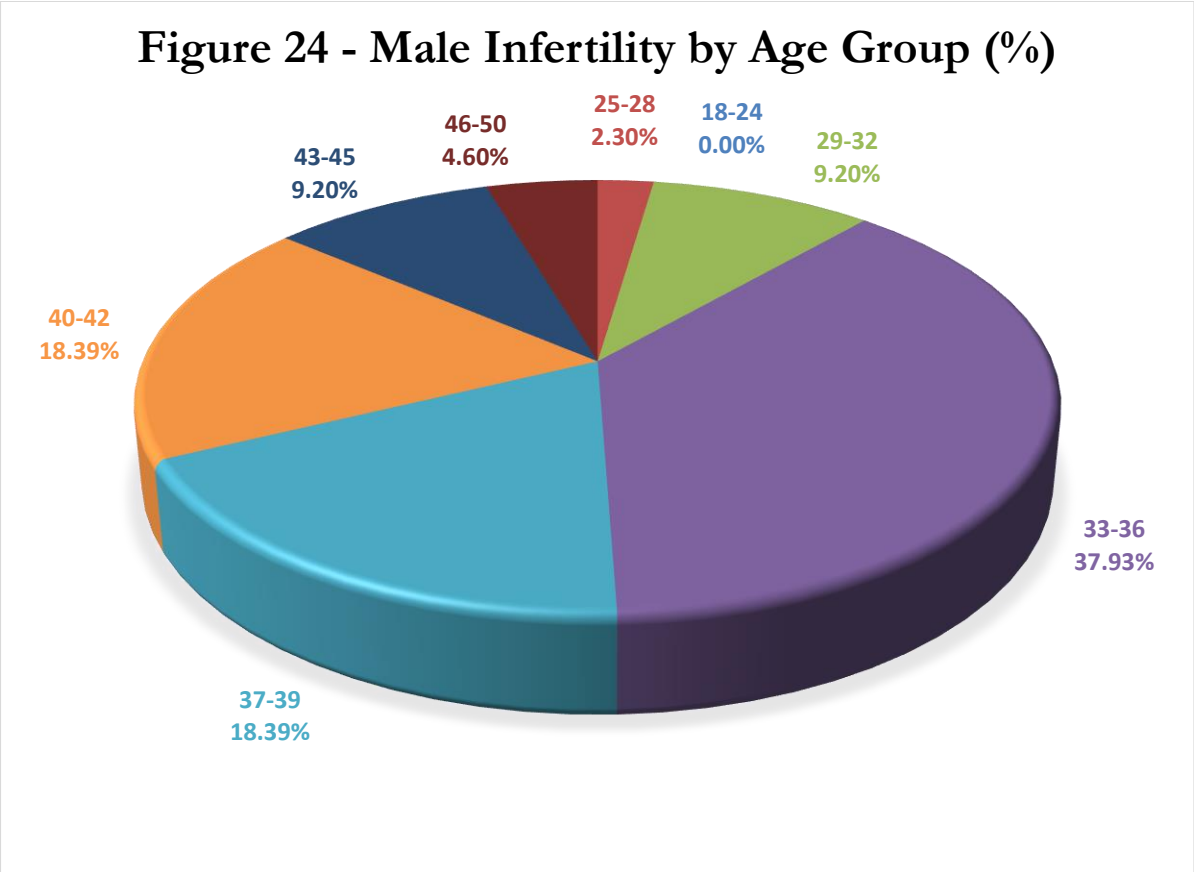


Figure 24 - Male Infertility by Age Group (%)
46-50
4.60%
25-28
2.30%
18-24
0.00%
29-32
9.20%
43-45
9.20%
40-42
18.39%
33-36
37.93%
37-39
18.39%

5. LIFESTYLE INDICATORS

5.1. Body Mass Index

For the fifth time since issuing its Annual Report, the Authority is presenting a picture of the Body Mass Index (BMI) of the Females resorting for Assisted Reproduction Treatments in Malta. It is the Authority's intention that in the coming months it will introduce a fertility education campaign aiming to raise awareness regarding the different factors effecting fertility, with BMI being also in mind, and to promote a healthy lifestyle that could help in achieving a pregnancy.

Classifications reported are based on the World Health Organisation Classifications, thus women having a BMI below 18.5 are classified as underweight, women with a BMI between 18.5 and 24.9 as normal weight, women with a BMI of 25 to 29.9 as pre-obesity (overweight). Women are classified as Obesity Class I if reporting a BMI of 30 to 34.9, Obesity Class II with a BMI of 35 to 39.9. Women with a BMI above 40 are classified as Obesity Class III.

In 2022, the BMIs of females reported ranged from as low as 15.6, lowest ever reported, and with the maximum BMI reported to be 66, again maximum ever reported, both at the MDH ART Clinic. Average of BMI of women who resorted to Medical Assisted Procreation in 2022 was of 25.43 a slight increase of 0.23 over average of last year, thus being classified as in the range of pre-obesity (overweight) range.

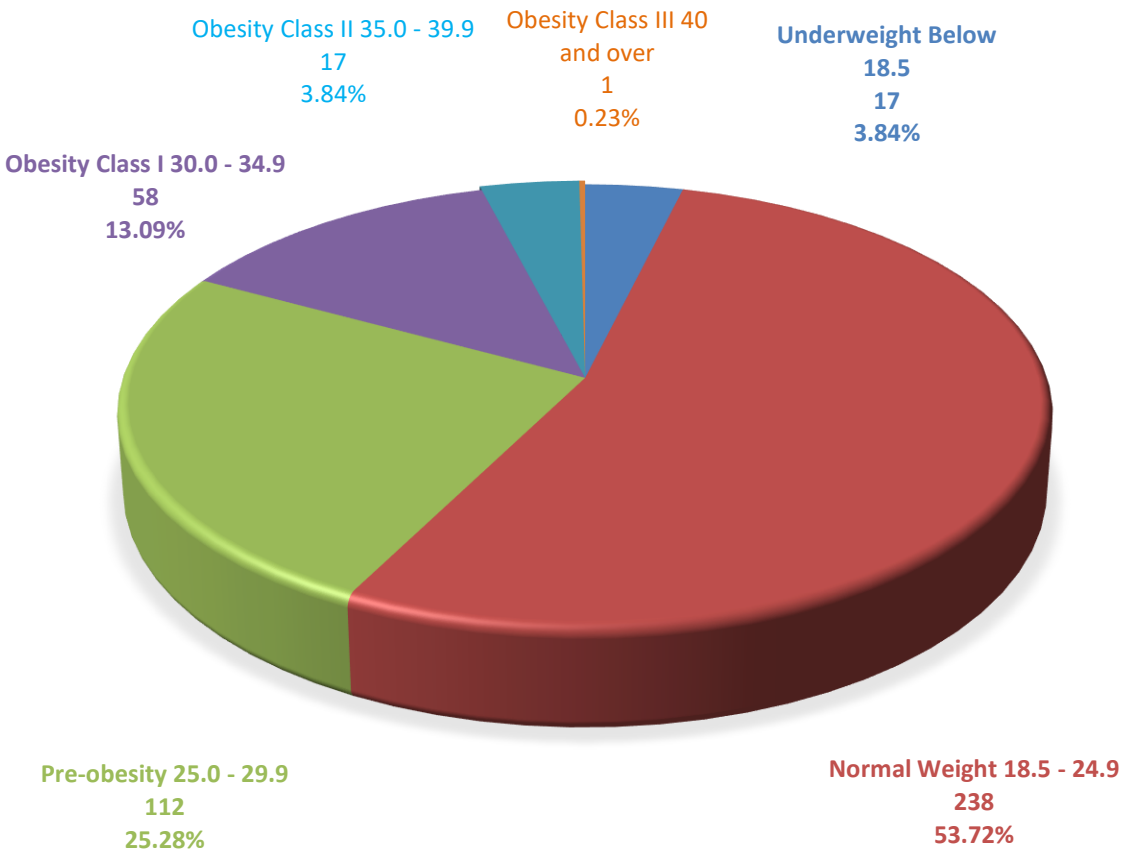
Seventeen (17) females or (3.84%) of females undergoing ART treatment in Malta through IVF/ICSI and/ or embryo transfer were reported to be underweight this shows a decrease of 1.37% over 2021, Two hundred and thirty-eight (238) females or (53.72%) were of normal weight, an increase of 1.64% over figures in 2021.

The remaining one hundred and eighty-eight (188) females or 42.44%, an increase of 10.15% over figures reported in 2021 were classified in the overweight and obese classifications. Noteworthy to bring to attention is the fact that 17.16% of all females resorting to ART treatments were classified as Obese. (Figure 25).

The Authority felt that this study needed to be presented in this year's annual report to give a holistic picture of the females undergoing ART treatments, as it is not only their fertility that effects the outcome of the treatment, but other factors play an important part in achieving a pregnancy.

As will be reported later in the pregnancy and miscarriages sections, the only female who underwent treatment in the Obesity Class III did not achieve a pregnancy.

Figure 25 - Body Mass Index of Females



6. TYPE OF CYCLE

6.1. Fresh vs Thawed

Prospective parents may opt for Fresh collection of oocytes or Thawed cycles using vitrified oocytes, or a combination of Fresh and Thawed. Oocyte selection and vitrification are routine practice at the local ART clinics. Given that vitrification technology holds great promise in terms of gamete survival, pregnancy rates and live births, data gathered on the outcomes from Thawed cycles is of high relevance. This is especially true considering gamete vitrification techniques being employed for fertility preservation, as in the cases of oncology patients.

Since the coming into effect of the changes to the Embryo Protection Act in 2018, patients who have made use of cryopreservation of embryos, will have to undergo embryo transfers of the cryopreserved embryos before creating new embryos through fresh cycles.

From a total of four hundred and eighty (480) procedures carried out in 2022, two hundred and one (201) or 41.88% were Fresh procedures with collection of oocytes and use of partner sperm, a further sixteen (16) procedures were Fresh procedures with collection of oocytes and use of donor sperm.

Another five (5) or 1.04% were Thawed oocytes cycles with the use of partner sperm and one procedure was a thawed oocytes cycle with the use of donor sperm. These six thawed cycles were all carried out at the private facility HOPE Fertility and IVF.

MDH ART Clinic did not perform any thawed oocytes procedures during this calendar year. None of the prospective parents undergoing treatment at both the private and public facilities in 2022, opted for a combined cycle whereby both fresh and thawed oocytes would have been utilized for the procedure.

Twenty-two (22) other procedures were carried out during 2022, which had prior approval for the pickup of fresh oocytes and a freeze all oocytes or freeze all embryos cycle due to fertility preservation. These amounted to 4.58% of all procedures carried out in 2022.

During 2022, two hundred and twenty-four (224) procedures or 46.67%, were embryo transfer only procedures created by partner sperm in both licenced facilities, another eleven (11) or 2.29% of all procedures carried out in 2022 were embryo transfer only procedures were carried out using cryopreserved embryos created by donor sperm.

These embryos were cryopreserved previously through the permissions granted by the Embryo Protection Authority after the prospective parents had requested additional fertilisation more than the two oocytes allowed by law, with the possibility of cryopreservation of remaining embryos (Table 2).

Table 2. Type of Procedure

Procedure	NHS	Self-Funded	Total	% of Total
Fresh oocytes	152	49	201	41.88%
Fresh oocytes with donor sperm	8	8	16	3.33%
Thawed oocytes	0	5	5	1.04%
Thawed oocytes with donor sperm	0	1	1	0.21%
Prior approval for a freeze all oocytes / embryo cycle	11	11	22	4.58%
Thawed embryos	214	10	224	46.67%
Thawed embryos with donor sperm	6	5	11	2.29%
Total	**391**	**89**	**480**	

Noteworthy is the fact that there has been a major drop in the procedures requiring a fresh collection of eggs cycle. During 2022, there was a 13.49% decrease in fresh oocytes collection cycles when compared to last year 2021, this is in line with a further drop of 12.86% in figures registered in 2021 compared to 2020. A slight decrease of 0.09% was registered in the prospective parents opting to undergo a

thawed oocyte cycle in 2022 when compared to 2021, however we note that cycles being undertaken at the Maltese Clinics do not promote oocyte vitrification, and the Authority notes that these cases have diminished considerably.

An increase of 5.43% was registered in thawed embryo cycles which were now being carried out in both licenced facilities. This increase year over year has been evident since the change in law in 2018, that allowed for the cryopreservation of embryos.

For the very first time this year a total of twenty-eight (28) procedures, IVF/ICSI and embryo transfers or a total of 5.83% of all procedures carried out made use of donor sperm to achieve a pregnancy.

Most cycles 56.27% carried out at the ART Clinic in Mater Dei Hospital were thawed embryo cycles, which were undertaken by two hundred and fourteen (214) prospective parents making use of their autologous gametes and six (6) prospective parents who use of donor sperm to create the thawed embryos. The remaining 43.73% of cycles were Fresh oocytes collection cycles undertaken by one hundred and sixty-three (163) prospective parents making use of their own gametes and eight (8) prospective parents making use of donor sperm. No thawed oocytes cycles were carried out on the NHS.

In the self-funded cycles, the majority of cycles 76.40% were Fresh oocytes collection cycles, undertaken by sixty (60) prospective parents making use of their own gametes and eight (8) prospective parents making use of donor sperm. A total of 6.75% were Thawed oocytes cycles, undertaken by five (5) prospective parents making use of their own gametes and one (1) prospective parent making use of

donor sperm. The remaining 16.85% of cycles were thawed embryo transfer that were self-funded in 2022, undertaken by ten (10) prospective parents making use of their own gametes to create their embryos and five (5) prospective parents making use of donor sperm to create their cryopreserved embryos.

This is the first year that the private sector is registering cycles with the use of donor sperm as previously, all the cycles that were performed at the private facility St James Conception Unit were undertaken by heterosexual couples, as the facility had opted out to apply for a licence to undergo procedures with third party donation.

6.2. Additional Fertilization Requests (AFRs)

Pursuant to the introduction of the Embryo Protection Act of 2012, the maximum number of oocytes which may be injected in any one cycle is two oocytes, or three oocytes in cases approved by the Authority under the Principal Act. All embryos created had to be transferred since vitrification (freezing) of embryos was forbidden by law under the Principal Act.

With the introduction of the Embryo Protection (Amendment) Act, 2018, all prospective parents will have two oocytes which may be injected in any one cycle however as approved in the AFR Protocol presented to the Parliamentary Health Committee, the Authority could approve up to a maximum of five oocytes to be injected in any one cycle, provided that the prospective parents have consented for embryo vitrification and potential embryo donation. Prospective parents who do not consent to embryo vitrification will only be allowed to inject two oocytes in any one cycle.

The latest amendments to the Embryo Protection Act enacted in July 2022, allowed for the removal of the maximum five oocytes from the Act itself and the maximum number of fertilisations was to be determined by the EPA Authority as published in its Protocol. The new Protocol now establishes that Women who have not attained age 39 can be granted up to a maximum of 5 oocytes, Women aged 39 up to 45 years can be granted up to a maximum of 8 oocytes. Prospective parents where the woman has not attained thirty-six (36) years of age will be allowed up to a maximum of eight oocytes/embryos to undergo PGTM. Prospective parents where the woman has attained thirty-six (36) years and have not attained forty-six (46) years of age will be allowed up to a maximum of twelve oocytes/embryos to undergo PGTM. No

permissions will be granted by the Authority that will exceed the Maximum capping of twelve (12) oocytes.

The Authority receives a significant number of requests from the licensed establishment clinicians to consider the fertilization of additional oocytes for specific couples, instead of the two permitted by law. These requests are analysed and discussed between the Members of the Authority together with Representatives from the Obstetrics and Gynaecology Association. Requests are considered on a case-by-case basis and matched against established criteria. These criteria include the age of the female patient undergoing treatment, together with the number of failed IVF/ICSI cycles that the couple had already undergone as well as the indication of infertility.

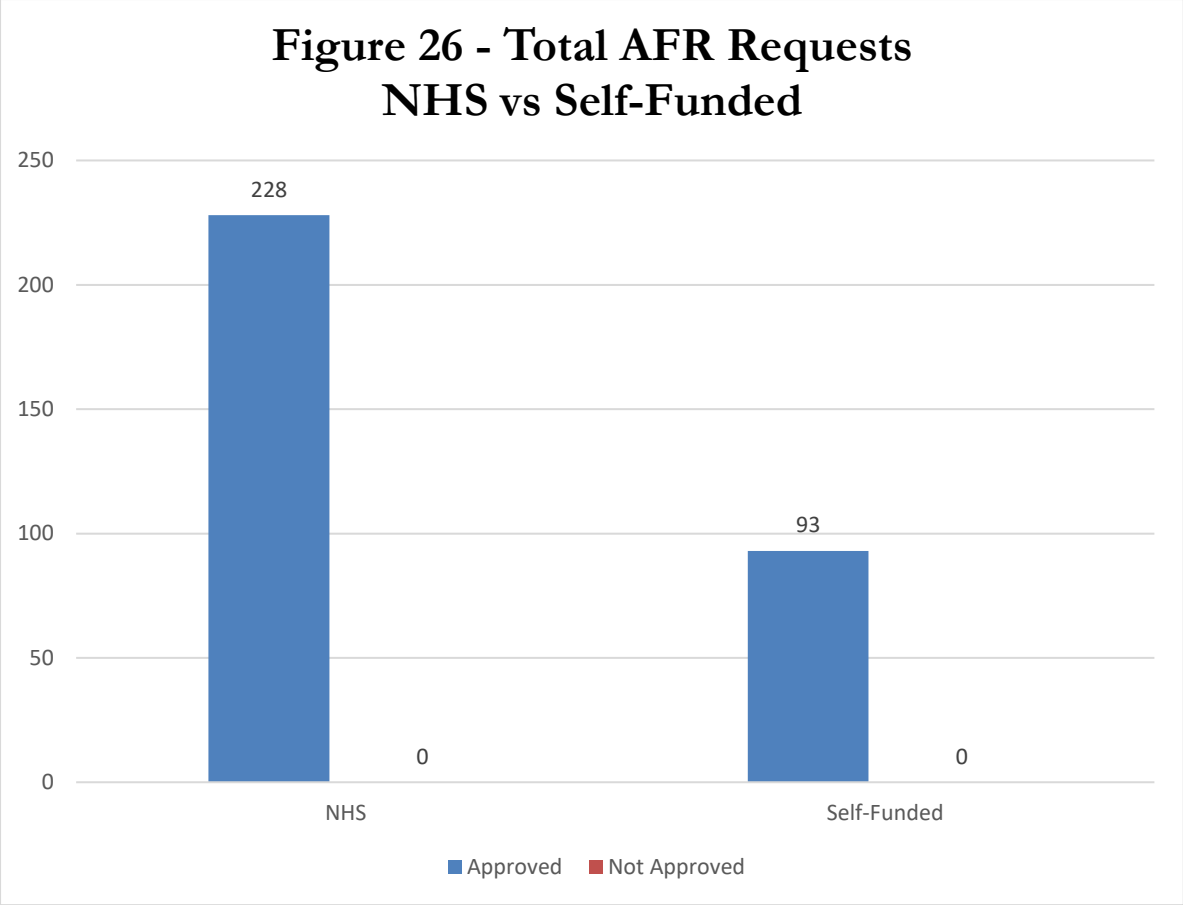
Throughout 2022, a total of three hundred and sixteen requests (316) requests for Additional fertilisations, all the requests were approved by Board. This meant an increase of 47% over 2021 when 205 requests were filed. These additional fertilisation requests were filed by prospective parents who wished to make use of the changes brought about with the new legislations in 2018 and 2022, were more than two oocytes were allowed to be fertilised on approvals granted by the Authority.

One (1) AFR request was made by prospective parents who wished to have 3 oocytes injected, another two (2) prospective parents opted to go for fertilisation of 4 oocytes, the majority of prospective parents two hundred and ninety-one (291) in total, chose to have 5 oocytes fertilised. The changes in legislation that came into force as of 29th of July 2022 allowed for the fertilisation of a maximum of 8 oocytes, this option was taken up by twenty-two (22) prospective parents.

Five (5) other prospective parents chose to undergo treatment without additional fertilisation requests, one request by prospective parents requested the fertilisation of one oocyte only, whilst four other prospective parents requested the fertilisation of two oocytes only.

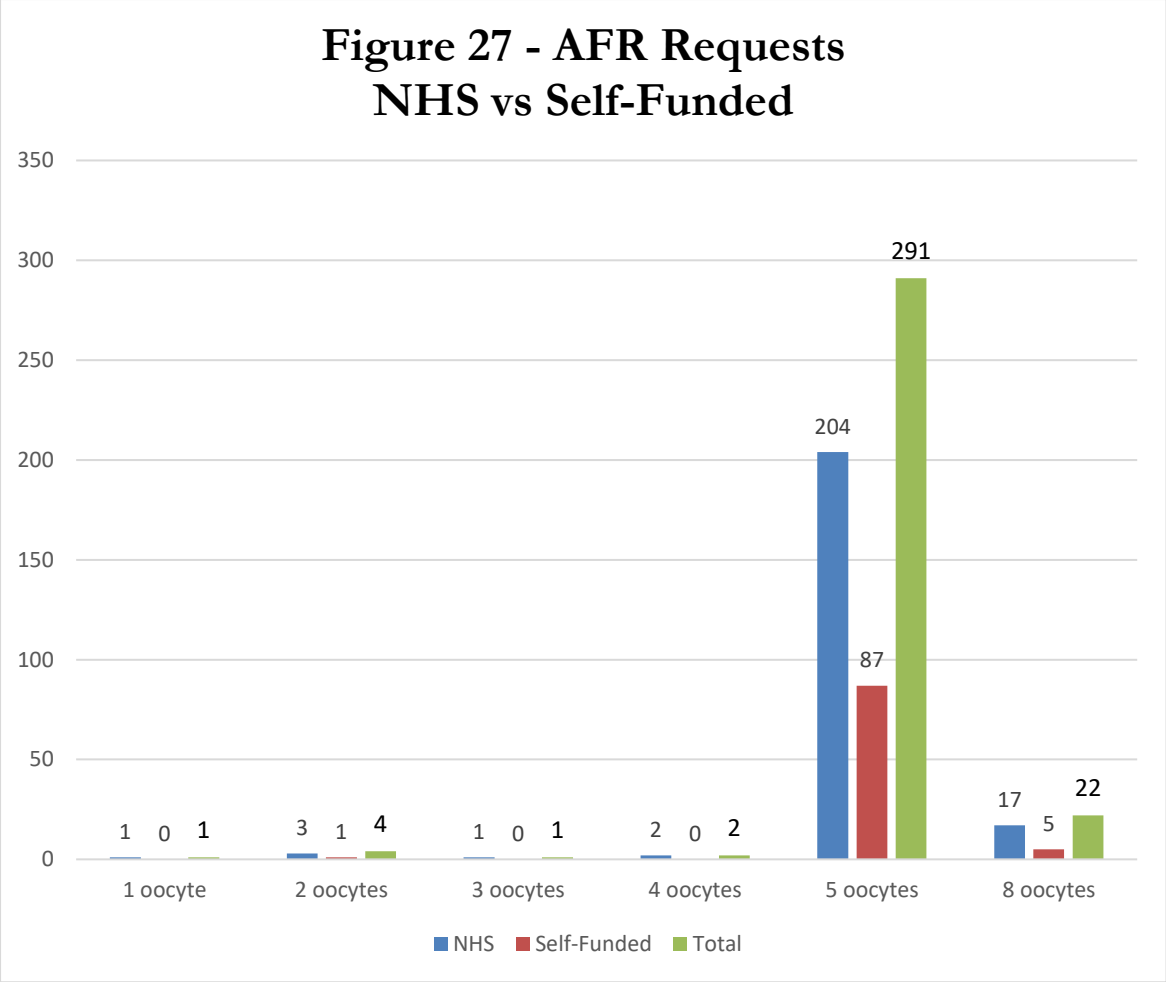
Most requests, two hundred and twenty-eight (228) requests or 71.02% came from the ART Clinic at MDH, one request for the fertilisation of three oocytes, two requests were for the fertilisation of four oocytes. The majority of the requests made by the ART Clinic, were of 204 requests for the injection of 5 oocytes under the Amendment Act, and a further seventeen (17) applications were made for the injection of the maximum of eight oocytes. All the 224 additional fertilisation requests were approved. The remaining 4 requests made by the ART Clinic at MDH were for patients who opted to follow the principal Act, one prospective parent requested only the fertilisation of one oocyte and three prospective parents requested to fertilise only two oocytes.

The remaining of requests, ninety-three requests (28.98%) of the AFR requests were made by private facility HOPE Fertility and IVF, eighty-seven of these requests were for the injection of 5 oocytes under the Amendment Act, and five (5) other requests were made for the injection of the maximum of eight oocytes. All the ninety-two (92) requests were approved. The remaining 1 request made by the private facility was for prospective parents who opted to follow the principal Act and thus fertilise only two oocytes. (Figures 26 and 27).



During 2022, all requests for fertilisations were approved by the Board. These approvals were issued both for the prospective parents who opted to follow the Principal Act and fertilise only two oocytes, as well as the requests made for additional fertilisations up to a maximum of eight oocytes.

No requests for the maximum of twelve oocytes in the cases of PGTM were received during 2022, as both private and public facilities were still not licenced for this procedure.



The number of patients who chose to undergo a procedure following the Principal Act and thus fertilise only two oocytes or less and opt out of additional fertilisations thus not cryopreserving embryos, were only five prospective parents. This registered a further drop of 1.37% to the requests made in 2021. Thus 1.56% of prospective parents chose not to go for additional fertilisation, whilst 98.44% of all prospective parents undergoing treatment in 2022 requested the Authority for additional fertilisation approvals.

7. GAMETES

7.1. Transfer of Gametes and Embryos

7.1.1 Transfer of Gametes and Embryos between Local Clinics

Throughout 2022, two (2) requests were received for the transfer of embryos from the MDH ART Clinic to the HOPE Fertility and IVF clinic. The Authority approved both requests for embryo movement and a total of six (6) embryos were shifted from the public to the private clinic.

Another two (2) requests for transfer of gametes were received by the Authority to transfer sperm between the Maltese Licenced Clinics. One of the requests was to transfer gametes from the St James Conception Unit to the MDH ART Clinic. The other was to transfer sperm from MDH ART Clinic to HOPE Fertility and IVF. The Authority approved both requests which included the transfer of thirteen (13) vials of sperm of two males.

Another three (3) requests for transfer of gametes were received by the Authority to transfer oocytes between the Maltese Licenced Clinics. One of the requests was to transfer gametes from the St James Conception Unit to the MDH ART Clinic. The other two requests were to transfer oocytes from St James Conception Unit to HOPE Fertility and IVF Clinic. The Authority approved all three requests which included the transfer of eighteen (18) oocytes of three females.

7.1.2 Transfer of Gametes and Embryos to and from Tissue Establishments Abroad

In 2022, the Authority received a request for the transfer of cryopreserved embryos from a Malta Tissue Establishment to Spain. The patient had cryopreserved these embryos at the St James Conception Unit and had decided to continue with treatment abroad. The Authority recommended to the Superintendent of Public Health to issue an on-off distribution approval on named patient bases so this transfer could be affected. Once approval was granted from the SPH, the Authority approved the movement of the cryopreserved embryos to be cryopreserved abroad. Eventually two cryopreserved embryos were distributed (exported) to Spain in 2022.

In 2022, the Authority also received one further request for the transfer of cryopreserved gametes, two vials of sperm, from the United Kingdom to Malta. The Authority issued, a one-off approval for the movement of the cryopreserved gametes after obtaining clearance from the Superintendence of Public Health. This approval was granted for vials to be cryopreserved in the private clinic HOPE Fertility and IVF in Malta. Distribution of these vials to Malta was affected in May 2022.

In the last quarter of 2021, the Authority received a request from a patient to transfer her cryopreserved oocytes from the private local clinic St James Conception Unit to a clinic in Spain. The Authority requested the local clinic to establish the necessary documentation for the distribution of gametes to another country for which an approval will be issued once all documentation is in place. The necessary documentation was established in the first quarter of 2022 and a one-off approval for the movement of the cryopreserved gametes after obtaining clearance from the

Superintendence of Public Health. In March 2022 two oocytes were distributed from St James Conception unit to Spain.

In 2022, after the establishing of a third-party agreement for the distribution of donor third party sperm from abroad, a country within the European Union, by the MDH ART Clinic, the Authority received nine (9) requests for the transfer of donor sperm to Malta. All nine (9) requests were approved by the Authority; however, one of the requests had to be rejected after approval as the sperm donor had reached his worldwide pregnancy limit. In 2022, the distribution of a total of thirty-two (32) donor sperm vials had been cryopreserved in the public tissue establishment to be used in procedures requiring the use of third-party donor sperm. 11 vials of donor sperm from three donors were also sent back to the foreign sperm bank from the MDH ART Clinic after receiving notification from the foreign tissue establishment not to be used in Malta.

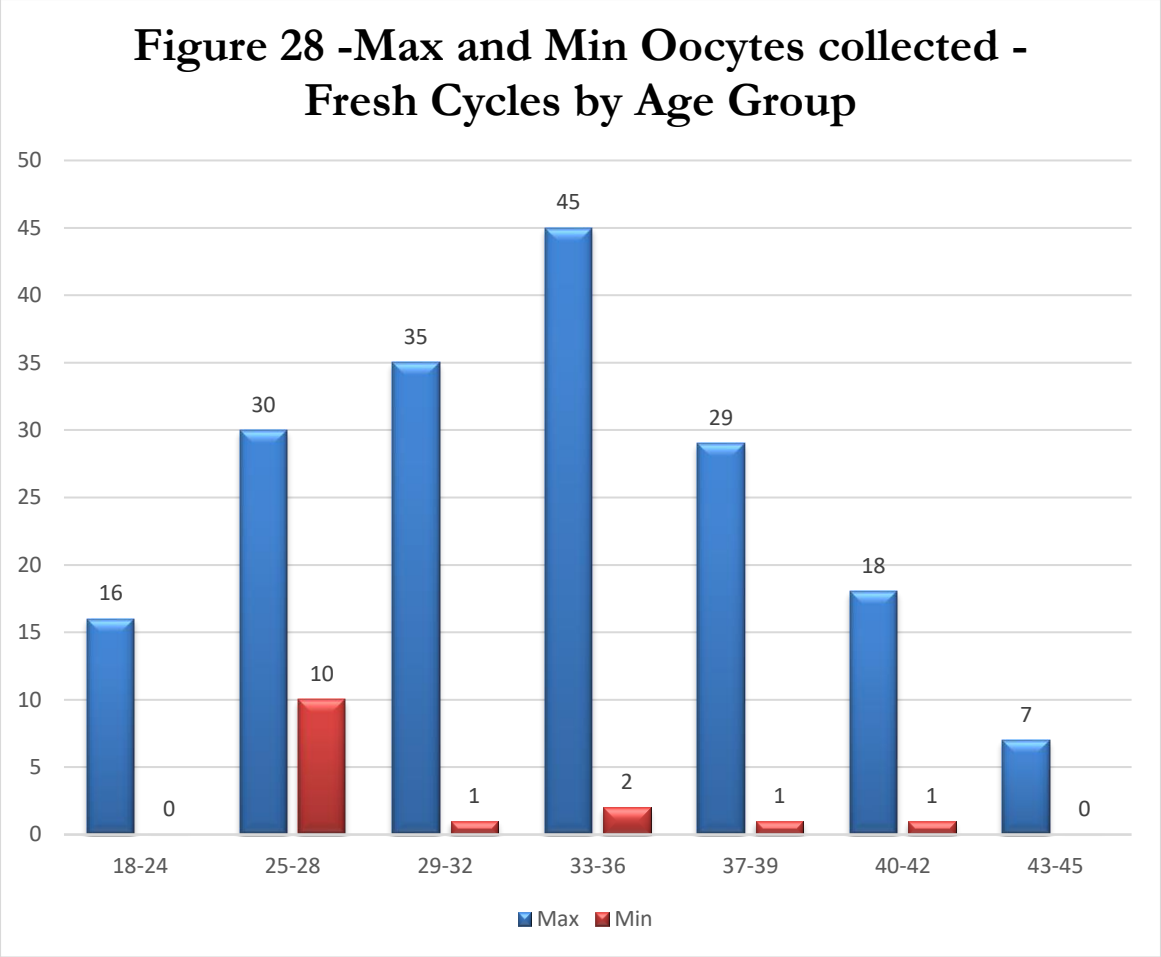
In 2022, the Authority received a further fifteen (15) requests for the transfer of donor sperm to the Malta private facility HOPE Fertility and IVF. Twelve (12) requests were approved by the Authority; and three of the requests had to be rejected as the sperm donor had exceeded the maximum age limit as allowed in the Maltese Legislation. In 2022, the distribution of a total of twelve (12) donor sperm vials were made and sperm vials cryopreserved in the private tissue establishment to be used in procedures requiring the use of third-party donor sperm.

7.2. Collection of Oocytes

The number of oocytes a female has remaining for the future, better known as 'ovarian reserve', is closely related to a woman's age but can vary considerably at any age. Oocyte quality is also associated with female age and the better the quality, the higher the probability for pregnancy since embryo quality is dependent on the quality of the oocytes. The number of oocytes attained through ART procedures such as IVF/ICSI strongly influences the chance for success.

During a Long Protocol IVF cycle, the female patient goes through down-regulation and ovarian stimulation phases that prepare her for treatment. The purpose of the Ovarian Stimulation phase is to stimulate the ovary into producing several follicles, inducing a controlled ovulation and maturation of oocytes to increase the chances of achieving a pregnancy during treatment.

From the two hundred and thirty-nine (239) Fresh cycles carried out in 2022, a total of 2350 oocytes have been collected, at an average of 9.83 oocytes per patient. The maximum number of oocytes collected from a single patient was 45 oocytes from a female in the 33-36 years age bracket, this was followed by 35 oocytes collected from a female in the 29-32 years bracket and followed by 30 oocytes collected from a female in the 25-28 age bracket. The first two patients with maximum oocytes had undergone treatment at HOPE Fertility and IVF and the patient who had 30 oocytes collected had undergone treatment at the MDH ART Clinic. (Figure 28).



In line with the reporting of previous year, in 2022 the largest number of average oocytes collected from one single patient, for an average of 20.11 oocyte per patient, was from females aged between 25 and 28, these were closely followed by 11.66 oocytes per patient, from females in the 29–32-year-old bracket. An average of 10.79 oocytes was collected from patients aged 33-36. Not surprisingly, less oocytes were collected from women aged 37-39 and 40-42, for an average of 8.08 and 6.30 oocytes respectively. Noteworthy is the fact that from the four women that were aged between 43 and 45, a total of 21 oocytes were collected, thus the average oocytes collected per patient is just of 5.25. Thus, statistics clearly show that women over 40, undergoing fresh cycles have a less chance of having a successful outcome if they use their own oocytes. (Table 3).

Table 3. Oocytes Collected by Age Group

Age	No of Females	Total Oocytes Collected	Average	Max	Min
18-24	2	16	8.00	16	0
25-28	9	181	20.11	30	10
29-32	44	513	11.66	35	1
33-36	87	939	10.79	45	2
37-39	53	428	8.08	29	1
40-42	40	252	6.30	18	1
43-45	4	21	5.25	7	0
OVERALL	239	2350	9.83		

When considering the number of oocytes collected from the total number of female patients undergoing a Fresh cycle, it appears that the quantity of oocytes collected per cycle relative to the age of the female patient is higher at HOPE Fertility and IVF Clinic, in all age groups except in the 43-45 age bracket, when compared to patients receiving treatment on the NHS at MDH ART Clinic.

The average oocytes collected per patient at MDH ART Clinic is 8.42 compared to the 13.38 at the private establishment (Table 4).

Table 4. Oocytes Collected by Age Group – NHS vs Self-Funded

Age	No of Females	Total Oocytes Collected	Average	No of Females	Total Oocytes Collected	Average
18-24	2	16	8.00	0	0	0.00
25-28	5	90	18.00	4	91	22.75
29-32	32	323	10.09	12	190	15.83
33-36	57	532	9.33	30	407	13.57
37-39	39	270	6.92	14	158	11.29
40-42	33	193	5.85	7	59	8.43
43-45	3	16	5.33	1	5	5.00
OVERALL	171	1440	8.42	68	910	13.38

As pointed out already, women are born with a lifetime reserve of oocytes, and with age, the quantity and their quality gradually decrease. The cells in developing follicles secrete a chemical substance named Anti-Mullerian Hormone (AMH) and the levels of this hormone in a woman's blood, is normally a good indicator of her ovarian reserve. With increasing age, serum AMH levels decrease. Women suffering from polycystic ovaries tend to have high serum AMH concentrations while women close to menopause normally have low levels.

Clinicians generally refer to the AMH test results to get some insight into the remaining number of oocytes their patient has got left. This is especially important since low AMH values could possibly suggest a poor response to IVF, while high values may denote an over-response to the IVF medication. Unfortunately, AMH levels do not tell us much about the quality of a woman's oocytes or her ability to get pregnant.

An analysis of the quantity of oocytes collected from women undergoing treatment and whose serum AMH values were ≤1μg/l, or less than 7pmol/l was performed. Since a significant number of AMH test results which were provided were older than six months, on the day of oocyte retrieval the actual serum AMH values of the patient might have been less than the reported value. Hence the accuracy of all the AMH-related analysis in this report cannot be guaranteed. The data in the chart may however be of significance to both patients themselves and the clinicians dealing with patients with poor ovarian reserve, with respect to possibilities and expectations of outcomes.

Throughout 2022, there were eighty-six (86) female prospective parents with a serum AMH concentration of ≤1μg/l, or less than 7pmol/l who had undergone a Fresh cycle. The total amount of oocytes collected from these 86 prospective parents was of four hundred and eighty-nine (489), with the maximum number of oocytes collected being 21 compared to the maximum 11 reported to be collected in 2021.

This year's minimum of oocytes collected from women with an AMH lower than 7pmol/l was of 0, same as last year, as it was reported that there were three (3) women who had no oocytes to collect.

Also, good to note that a further four (4) women, although managed to have a collection of oocytes, had all their collected oocytes discarded as they were immature.

The average number of oocytes collected was 5.69 per patient, a bit higher than the figures reported in 2021, and there were sixty-five (65) females out of eighty-six (86) female prospective parents with a serum AMH concentration of ≤1μg/l, or less than 7pmol/l who had 5 or more oocytes collected. (Table 5).

Table 5. Oocytes collected for AMH ≤1μg/l

AMH <= 1 Occurrences	Min Oocytes Collected	Max Oocytes Collected	Total Oocytes Collected	Average Oocytes Collected	Occurrences with 5 oocytes or more
86	0	21	489	5.69	65

7.3. Oocytes Discarded

Oocytes obtained following ovarian stimulation should meet certain criteria to be considered suitable for IVF/ICSI. An appraisal is usually done by Embryologists to classify these oocytes, and those which are not deemed suitable for immediate fertilization or vitrification are discarded.

From a total of 237 oocytes collections carried out during this calendar year, a total of eight hundred and two (802) oocytes have been discarded in 2022. Seven hundred and eighty-nine (789) oocytes (98.38% of all discarded oocytes), or 33.57% from the total oocytes collected, were discarded following the egg retrieval process (Fresh cycle), for an average of 3.33 discarded oocytes per Fresh cycle.

The remaining thirteen (13) oocytes (1.62% of all discarded oocytes) failed to survive the thawing process, for an average of 1.44 oocytes discarded per Thawed cycle.

The total average of discarded oocytes for both Fresh and thawed processes was 3.26 oocytes per procedure. (Table 6).

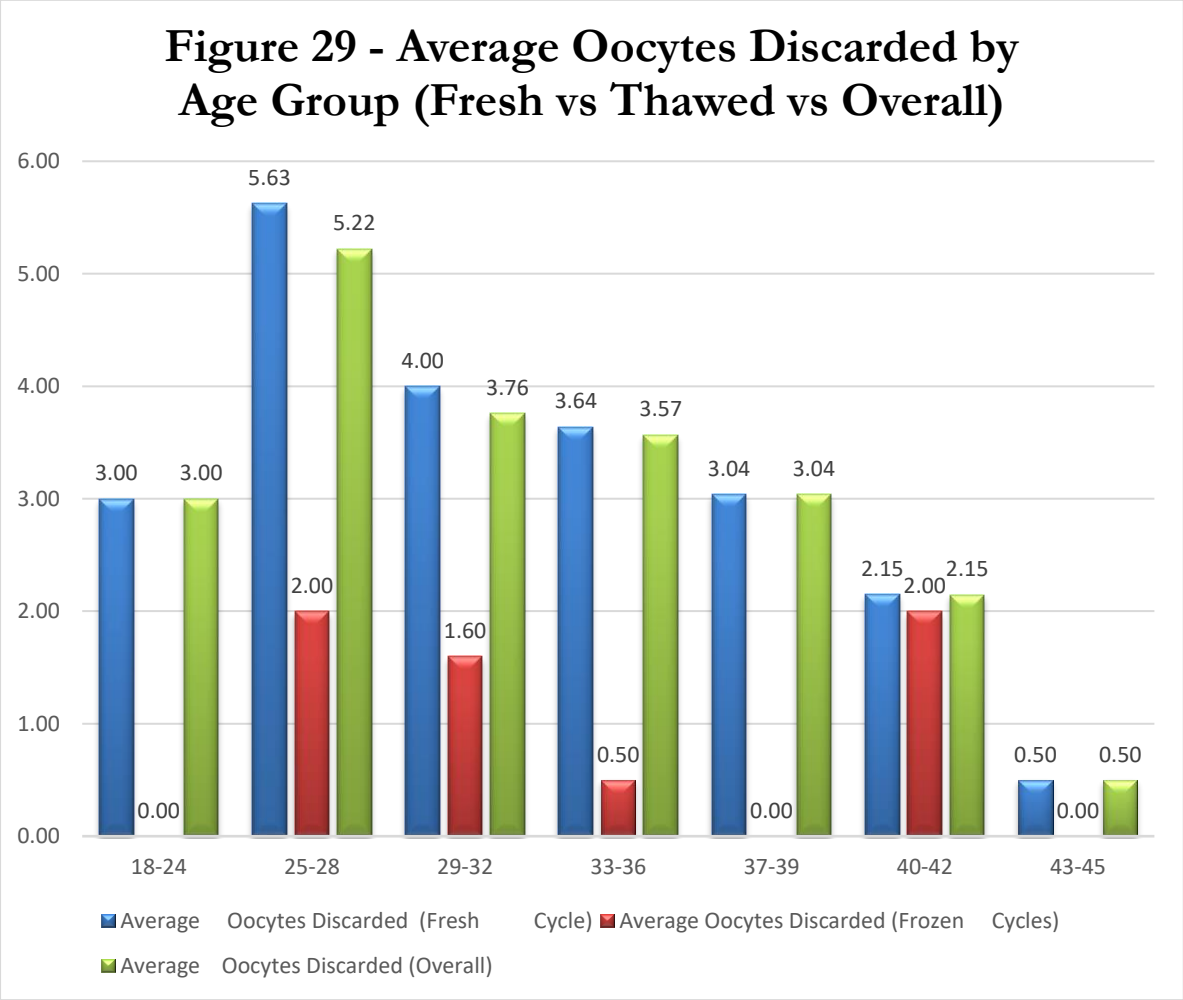
In 2022, in line with figures reported in 2021 and previous years except in 2020, the largest number of oocytes discarded is from women in the 33–36-year age bracket. This age group had a total of three hundred and fourteen (314) oocytes that were discarded prior to injection.

Table 6. Oocytes Discarded

Age	No of Females (Fresh Cycle)	Total Oocytes Discarded (Fresh Cycle)	Average Oocytes Discarded (Fresh Cycle)	No of Females (Frozen Cycles)	Total Oocytes Discarded (Frozen Cycles)	Average Oocytes Discarded (Frozen Cycles)	No of Females (Overall)	Total Oocytes Discarded (Overall)	Average Oocytes Discarded (Overall)
18-24	2	6	3.00	0	0	0.00	2	6	3.00
25-28	8	45	5.63	1	2	2.00	9	47	5.22
29-32	44	176	4.00	5	8	1.60	49	184	3.76
33-36	86	313	3.64	2	1	0.50	88	314	3.57
37-39	53	161	3.04	0	0	0.00	53	161	3.04
40-42	40	86	2.15	1	2	2.00	41	88	2.15
43-45	4	2	0.50	0	0	0.00	4	2	0.50
OVERALL	**237**	**789**	**3.33**	**9**	**13**	**1.44**	**246**	**802**	**3.26**

Noteworthy is the fact that whilst in 2021 the discarding rate of oocytes stood at 37.78%, during 2022 there was a decrease of 4.18% in oocytes that were discarded resulting in 33.60% of all collected oocytes / thawed oocytes being discarded.

The MDH ART Clinic reported a 37.50% discarding rate from oocytes collected at its centre and only reported to cryopreserve just 17.50% of all oocytes collected. Whilst HOPE Fertility and IVF reported a discarding rate of 32.51% of total oocytes collected, and also reported to have cryopreserve 39.35% of all oocytes collected. (Figure 29).



Whilst figures of 2021, show a constant average discarding of oocytes per patient for each age group which ranged from 1.00 to 6.00, this year's figures range from 0.50 to 5.22 oocytes discarded per patient, with the most oocytes discarded per patient being in the 25 to 28 age group brackets.

7.4. Fresh vs Thawed Sperm

Out of the two hundred and nineteen (219) cycles carried out in 2022 which required the provision of sperm for the injection into the oocytes used in the procedures, thawed sperm has been utilized in thirty-one (31) cycles.

This is 14.16% of the procedures undergone, which has registered an increase of 1.91% over the 12.25% figure registered in 2021. Noteworthy to point out is that out of the thirty-one (31) ICSI procedures making use of thawed prior cryopreserved sperm, thirteen (13) procedures made use of prior cryopreserved partner sperm, whilst the remaining eighteen (18) ICSI procedures made use of the distributed cryopreserved donor sperm from abroad.

The remaining one hundred and eighty-eight (188) cycles made use of Fresh sperm, ejaculated or in some instances obtained through eleven (11) testicular extraction/aspiration, carried out during the calendar year.

7.5. Storage of Gametes and Embryos

Pursuant to the introduction of the Embryo Protection Act of 2012, licensed clinics were allowed to store gametes (oocytes and sperm). Storage of gametes started as of July 2013 in the private licensed clinic, while storage from Government-funded cycles started in January 2014. Storage at the MDH facility started as of January 2015.

Up to 1st October 2018, embryo cryopreservation was only allowed in exceptional cases as approved by the Authority. With the introduction of the Embryo Protection Amendment Act of 2018, embryo cryopreservation was made available to all prospective parents with prior approval of additional fertilisations from the Authority.

7.5.1. Storage of Oocytes

Out of the two hundred and thirty-nine (239) females who had oocytes retrieved in 2022, only eighty (80) prospective parents or 33.47% had enough oocytes to store. This has registered an increase of 10.43% from previous year. This increase is a result of the fact that the new private facility HOPE Fertility and IVF, has vitrified oocytes in 67.65% from all procedures having an oocyte collection. On the other hand, in line with figures registered in previous years, the public facility MDH ART Clinic has vitrified oocytes only in 19.88% of the cycles that had an oocyte collection.

A total of one hundred and fifty-nine (159) prospective parents or 66.53% of prospective parents had no oocytes left to vitrify. Whilst in the public MDH ART Clinic a total of 80.12% of prospective parents had no oocytes vitrified, in the private facility HOPE Fertility and IVF this was only done in 32.35% of the procedures undertaken. (Table 7).

Table 7 – Fresh Cycles with NO Oocyte Vitrification

	NHS			Self-Funded			Total		
Age	No of Cycles	Total Cycles with NO Oocytes to Vitrify	% of cycles with no Oocytes to Vitrify	No of Cycles	Total Cycles with NO Oocytes to Vitrify	% of cycles with no Oocytes to Vitrify	No of Cycles	Total Cycles with NO Oocytes to Vitrify	% of cycles with no Oocytes to Vitrify
18-24	2	1	50.00%	0	0	0.00%	2	1	50.00%
25-28	5	1	20.00%	4	0	0.00%	9	1	11.11%
29-32	32	23	71.88%	12	0	0.00%	44	23	52.27%
33-36	57	43	75.44%	30	10	33.33%	87	53	60.92%
37-39	39	37	94.87%	14	6	42.86%	53	43	81.13%
40-42	33	29	87.88%	7	5	71.43%	40	34	85.00%
43-45	3	3	100.00%	1	1	100.00%	4	4	100.00%
OVERALL	**171**	**137**	**80.12%**	**68**	**22**	**32.35%**	**239**	**159**	**66.53%**

The total number of oocytes vitrified from Fresh cycles carried out in 2022 was of 610, this is much higher than previous years and contrasts well with the 257oocyte vitrified in 2021, the 160 oocytes vitrified in 2020 and the 172 vitrified in 2019.

The majority of the 610 cryopreserved oocytes, 358 oocytes or 58.68% were cryopreserved at the private facility HOPE Fertility and IVF. These were cryopreserved out of the 68 procedures with oocyte collection carried out in 2022 at the private facility, thus an average of 5.26 oocytes per prospective parent were cryopreserved.

Conversely, at the MDH ART Clinic only 252 oocytes were cryopreserved. These were cryopreserved out of the 171 procedures with oocyte collection carried out in 2022 at the public facility, thus an average of 1.47 oocytes per prospective parent were cryopreserved.

At the MDH ART Clinic, the maximum number of oocytes vitrified from a single cycle was twenty-four (24) oocytes from a prospective parent aged twenty-five (25) years and the minimum was two (2) oocytes. At the private facility HOPE Fertility and IVF, the maximum number of oocytes vitrified from a single cycle was twenty-six (26) oocytes from a prospective parent aged thirty-three (33) years and the minimum was of one (1) oocyte.

During 2022, at total of thirty-seven (37) cryopreserved oocytes were thawed for use in the procedures carried out during 2022. All thawed oocytes were used at the private facility HOPE Fertility and IVF. The maximum number of oocytes thawed for one single female from thawed oocyte cycles was eleven (11) oocytes whilst the minimum number of oocytes thawed was of one (1) which was cryopreserved beforehand.

7.5.2. Storage of Sperm

In 2022, the Authority received a total of one hundred and fifteen (115) requests from the licenced tissue establishments to grant permission for sperm cryopreservation, One hundred and eight (108) requests from the MDH ART Clinic and seven (7) from the new private clinic HOPE Fertility and IVF. All 115 requests were granted permission to cryopreservation of sperm. The 115 requests were made for males aged between 17 years and 56 years.

A total of one hundred and three (103) males vitrified their sperm, the remaining twelve (12) who requested sperm cryopreservation did not vitrify sperm. In eleven (11) cases, testicular aspiration/extraction (TESA/TESE) was performed to obtain sperm surgically.

Twenty (20) requests were made by males, aged between 17 years and 48 years requesting Fertility preservation following oncology diagnosis prior to starting chemotherapy, out of which nineteen (19) had a successful cryopreservation for future use.

Another six (6) males aged between 17 years and 29 years made requests for cryopreservation of sperm prior to starting to receive hormone therapy to transition from male to female. All successfully cryopreserved their sperm.

The other eighty-nine (89) requests, an increase of 35 requests over previous year were made by males aged between twenty-one (21) years and fifty-six (56) years who had Urology referrals with the main reason for referral being decrease in male fertility parameters and azoospermia.

Seventy-eight (78) of these males successfully cryopreserved sperm. There has been a continuous request for sperm storage from the Urology Consultants throughout 2022. Fourteen (14) of these male patients who stored their sperm did this prior to immediately proceeding with an IVF/ICSI or an IUI cycle, all of which successfully cryopreserved sperm. (Table 8).

Table 8 – Storage of Sperm

	Cryopreservation Requests	Cryopreserved Sperm	Not Cryopreserved
Oncology Referrals	**20**	**19**	**1**
Urology Referrals	**75**	**64**	**11**
Prior to IVF or IUI Procedures	**14**	**14**	**0**
Transgender	**6**	**6**	**0**
Total	**115**	**103**	**12**

7.5.3. 'Freeze-All' Oocytes Cycles

In exceptional circumstances, clinicians may decide to proceed with oocyte retrieval but freeze all the oocytes for later fertilization. This is usually the case when uterine pathologies or a risk of Ovarian Hyperstimulation (OHSS) has been identified. It may also be the case that while the oocytes were being retrieved, the male partner had no viable sperm in the sample provided; or else no sperm was found during a TESA procedure, and hence fertilization couldn't take place.

During this calendar year there were also patients who were given prior approval by the Authority to proceed with a freeze-all cycle, as detailed in Section 1.8 above.

The Authority has received twenty-six (26) requests in 2022, which is more than three times the requests received in 2021 and six times more than the requests made in 2020, from the licensed clinics to grant permission for oocyte retrieval and cryopreservation only and/or embryo cryopreservation for twenty-six (26) women aged between 18 and 45, who wanted to preserve their fertility.

Six permissions were granted to six women on medical grounds who made this request prior to starting chemotherapy for oncology diagnosis. Four of these women opted to cryopreserve oocytes only and not proceed with embryo cryopreservation. One other woman opted for embryo cryopreservation only, whilst one other woman abandoned the cycle after permission was granted. From the five permissions granted a total of 74 oocytes were collected, 51 of which were

cryopreserved, three embryos were also cryopreserved for later use at the MDH ART Clinic.

Another eleven women, two at the MDH ART Clinic and nine at the HOPE Fertility and IVF Clinic, were granted approvals to cryopreserve their fertility on medical grounds not related to oncology, these patients opted for cryopreservation of oocytes. Another two approvals were granted to two females prior to starting the process to transitioning into a male, these patients opted for cryopreservation of oocytes.

The other four women requested to cryopreserve their oocytes at the private facility HOPE Fertility and IVF for social freezing reasons, to use their oocytes at a later stage in life. All requests were approved.

Out of the twenty-six approvals granted, seventeen women had successful oocyte retrieval, collecting in total 152 oocytes. Four women had abandoned the cycle after approval was granted, one had no oocytes collected whilst another four although approved in 2022 are still not yet done. From the seventeen women who had a successful oocyte retrieval, sixteen had successful oocyte cryopreservation, cryopreserving a total of 115 oocytes and one woman successfully cryopreserved three embryos for future use.

7.5.4. Embryo Cryopreservation

In Malta, under the Principal Act up to 30th September 2018 permission for cryopreservation of embryos could only be granted by the Embryo Protection Authority as per Article 7 of the Law, if transfer of the fertilized embryos in the womb was not possible owing to grave and certified *force majeure* not predicted at the moment of fertilization. The total of embryos cryopreserved under these exceptional cases clause between 2013 and 2018 amounted to seven (7) embryos.

With effect from 1st October 2018 and the introduction of the Embryo Protection Amendment Act, prospective parents undergoing ART treatment could opt to have additional fertilisation, two embryos transferred in one cycle and the resultant embryos cryopreserved for future use.

During 2022, the Authority received notification from the private facility HOPE Fertility and IVF, that they had twenty-five 'freeze all embryos' cycles. The reason for these twenty-five 'freeze all embryos' cycles include, as the Embryologists reported on the EEART system, that twelve (12) cases of these cycles or 48% of all freeze all embryo cycles in the private sector were a result of endometrium issues. This was followed by five (5) of these cycles or 20% of all freeze all embryo cycles in the private sector were a result of a risk of Ovarian Hyperstimulation (OHSS) after fertilisation of the oocytes were carried out. Three (3) other cases or 12% were due to endometriosis. Another three (3) cases were due to various medical reasons amongst which were polyps and uterine treatment necessary between fertilisation and embryo transfer date. There was one request due to patient's health condition thus cycle was postponed, and all embryos were cryopreserved. The remaining freeze all embryo cycle resulted from an embryo with triploidic (maternal origin),

this embryo had three pronucleus rather than two, a request was made to the Authority Board which was granted to cryopreserve and not use same embryo.

During 2022, the Authority also received notifications from the public facility MDH ART Clinic, that in one hundred and thirty-seven (137) cycles, or 95.14% of cases, all embryos created had to be cryopreserved. The Embryologists reported on the EEART system that eighty-four (84) cycles or 61.31% of all freeze all embryo cycle were a result of High Oestradiol levels. Another twenty (20) cases or 14.60% were due to various medical reasons amongst which were polyps, fibroids, adenomyosis and uterine treatment necessary between fertilisation and embryo transfer date.

These were followed by twelve (12) cycles or 8.76% of all freeze all embryo cycles were a result of a risk of Ovarian Hyperstimulation (OHSS) after fertilisation of the oocytes were carried out, this was closely followed by eleven (11) or 8.03% other cases which required a freeze all embryo cycle due to High Progesterone levels. There were seven (7) cases or 5.10% which were postponed, and all embryos cryopreserved due to endometrium issues. The other three remaining cycles or 2.2% of cycles that required a freeze all embryo cycles were due to endometriosis.

Since the introduction of the amendment law in 2018, a total of one thousand two hundred and forty-three (1243) embryos have been cryopreserved for future use, thus bringing total to one thousand two hundred and fifty (1250) cryopreserved embryos. Noteworthy is the fact that four hundred and ninety-one (491) of which were cryopreserved during the calendar year of 2022.

A total of one thousand one hundred and one (1101) embryos were cryopreserved at MDH ART Clinic, another one hundred and sixteen (116) were cryopreserved at the HOPE Fertility and IVF clinic, whilst only thirty-three (33) were cryopreserved at St James Conception Unit. (Table 9).

Table 9 – Storage of Embryos since 2013

Embryo Storage	MDH ART CLINIC	ST JAMES CONCEPTION UNIT	HOPE FERTILITY AND IVF	TOTAL
Exceptional Cases	7	0	0	7
Oct-18	16	0	0	16
2019	121	6	0	127
2020	184	7	0	191
2021	398	20	0	418
2022	375	0	116	491
Total Storage	1101	33	116	1250

Out of the total of one thousand two hundred and fifty (1250) embryos in storage, during 2022, seven embryos were transferred between the three local licenced clinics. Another two embryos were transferred from Malta to be stored abroad. Whilst three hundred and sixteen (316) embryos were thawed to be used in embryo transfer procedures carried out in 2022. Eight of the embryos thawed did not survive the

survive the thawing process. Thus, the total of embryos cryopreserved as at end of 2022 stood at five hundred and sixty-one (561).

The majority of these embryos four hundred and sixty-two (462) are stored at the MDH ART Clinic, ninety (90) are stored at the HOPE Fertility and IVF Clinic and the remaining nine (9) embryos are stored at St James Conception Unit. (Table 10).

Table 10 – Storage of Embryos distribution 2022

Embryo Storage	MDH ART CLINIC	ST JAMES CONCEPTION UNIT	HOPE FERTILITY AND IVF	TOTAL
Storage as at 01/01/2022	376	12	0	388
2022	375	0	116	491
Total	751	12	116	879
Transfer between local Clinics	-5	-1	6	0
Transfer from Clinics Abroad	0	0	0	0
Transfer to Clinics Abroad	0	-2	0	-2
Embryos Used 2022	-284	0	-32	-316
Storage as at 31/12/2022	462	9	90	561

7.6. End of Storage

During 2022, two (2) requests were received from prospective parents who wished to discard their six (6) frozen oocytes stored both at the public facility.

7.7. Total Storage

As at 31st December 2022, the total amount of oocytes stored at the licensed clinics stood at a total of Two thousand six hundred and forty-four (2644) oocytes with the majority stored at MDH, whilst the total number of sperm vials was of two thousand two hundred and seventy-eight (2278), again the majority stored at MDH. The five hundred and sixty-one (561) cryopreserved embryos of which the majority four hundred and sixty-two (462), are stored at the ART Clinic in Mater Dei Hospital whilst the remaining ninety-nine (99) embryos are stored at the private facilities namely HOPE Fertility and IVF and St James Conception Unit (Table 11).

Table 11 – Total Storage

Type of Storage	MDH ART CLINIC	ST JAMES CONCEPTION UNIT	HOPE FERTILITY AND IVF	TOTAL
Oocytes	1940	380	324	2644
Sperm	2171	88	19	2278
Embryos	462	9	90	561

The five hundred and sixty-one (561) embryos cryopreserved at all centres, belong to two hundred and seventy-three (273) prospective parents, two hundred and twenty-nine (229) of which received treatment at the MDH ART Facility, forty (40) of which received treatment at the HOPE Fertility and IVF Clinic, and four (4) at the St James Conception Unit. Four (4) other embryos that are stored at the MDH ART Clinic are under the custodianship of the Authority. (Table 12).

Table 12. Embryos in storage per prospective parent

Embryo Storage per prospective parent	MDH ART CLINIC	ST JAMES CONCEPTION UNIT	HOPE FERTILITY AND IVF	TOTAL
1 embryo	84	0	12	96
2 embryos	82	3	12	97
3 embryos	46	1	11	58
4 embryos	13	0	4	17
4 embryos EPA custodianship	1	0	0	1
5 embryos	4	0	1	5
Total prospective parents	230	4	40	274

The number of embryos still in storage for each prospective parent vary from one embryo to five embryos. The majority of prospective parents, ninety-seven (97) have two embryos cryopreserved, followed closely by ninety-six prospective parents who have one embryo cryopreserved. Another fifty-eight prospective parents have three embryos cryopreserved, followed by seventeen (17) prospective parents who still have cryopreserved four embryos. Five (5) other couples have the maximum of five embryos cryopreserved.

Although changes to legislation have come into place in July 2022, allowing the maximum fertilisation of eight oocytes instead of five oocytes, up to end of 2022 there were no prospective parents who had a total of more than five embryos cryopreserved for future use.

All prospective parents, except one couple, have expressed their willingness to make use of their cryopreserved embryos including the prospective parents that already gave birth through IVF and the prospective parents that are expecting to give birth from cycles carried out. Thus, four embryos are currently under the custodianship of the Authority and are available for embryo adoption.

8. IVF/ICSI PROCEDURES

8.1. Cycles Started

In addition to the cycles which have been performed throughout the calendar year, licensed clinics have also reported a total of sixty-eight (68) cycles which were abandoned prior to oocyte retrieval. All sixty-eight (68) prospective parents who abandoned their cycle were undergoing treatment either at the MDH ART Clinic or else at the private facilities. Many cycles were abandoned due to poor response to the stimulation treatment the female prospective parents received, other cycles were abandoned as the prospective parent got pregnant naturally whilst waiting for their cycle, others abandoned the cycle for medical reasons, whilst others had decided that they do not want to pursue any more in this journey. There were other prospective parents who abandoned their approved treatment at one tissue establishment to move to another tissue establishment.

8.2. Type of Procedure - IVF vs ICSI

In 2022, from a total of four hundred and eighty (480) cycles started, no IVF/ICSI procedure was carried out for thirty-five (35) prospective parents. This was due to the fact that there were thirteen (13) prospective parents who had either no oocytes to collect or their oocytes did not fertilise or else the oocytes collected had to be all discarded as they were of poor quality, these prospective parents performed their procedures at both the MDH ART Clinic and the HOPE Fertility and IVF Clinic.

Another twenty-two patients (22) patients had opted for a 'Freeze-all oocyte' or a 'freeze-all embryos' cycle that were prior approved by the Authority, due to oncology reasons, for social freezing at the private facility, and females who stored oocytes prior to receiving hormonal treatment prior to transitioning. (Table 13).

Table 13. Type of ART Procedures

Type of ART	NHS	Self-Funded	Total
IVF	0	0	0
ICSI	147	63	210
Embryo Transfer	220	15	235
Nil Procedure	24	11	35
Total	**391**	**89**	**480**

The two hundred and ten (210) procedures carried out; all (100%) were *intra-cytoplasmic sperm injection* (ICSI). In contrast to conventional *in vitro* fertilization (IVF), where a single egg is incubated in the presence of a significant number of sperm, while in ICSI, the embryologist selects a single sperm to be injected directly into an egg.

This contrast with figures quoted for the early years in regard to procedures carried out at MDH ART Clinic wherein few procedures were reported as IVF's. The newly licensed private clinic also opted for an '*All-ICSI*' approach.

8.3. Oocytes Injected and Fertilisation

Throughout 2022, a total of nine hundred and forty-eight (948)oocytes were injected, the majority nine hundred and twenty-six (926) oocytes or 97.68% of the total oocytes injected were from fresh cycles, the remaining twenty-two (22) oocytes or 2.32% of the total injected oocytes where from thawed cycles. (Table 14).

Table 14. Oocytes Injected

Type of Cycle	Oocytes Injected	%
Fresh	926	97.68%
Thawed	22	2.32%
Total	948	

Out of the total nine hundred and forty-eight (948) injected oocytes, there were seven hundred and fifty-eight (758) oocytes that reached fertilisation stage while one hundred and ninety (190) oocytes did not fertilise (Figure 30).

Thus, fertilisation rate is of 79.96% of all oocytes injected, a decrease of 1.11% from figures reported in 2021, where fertilisation rate was reported as 81.07% in that calendar year. (Figure 31).

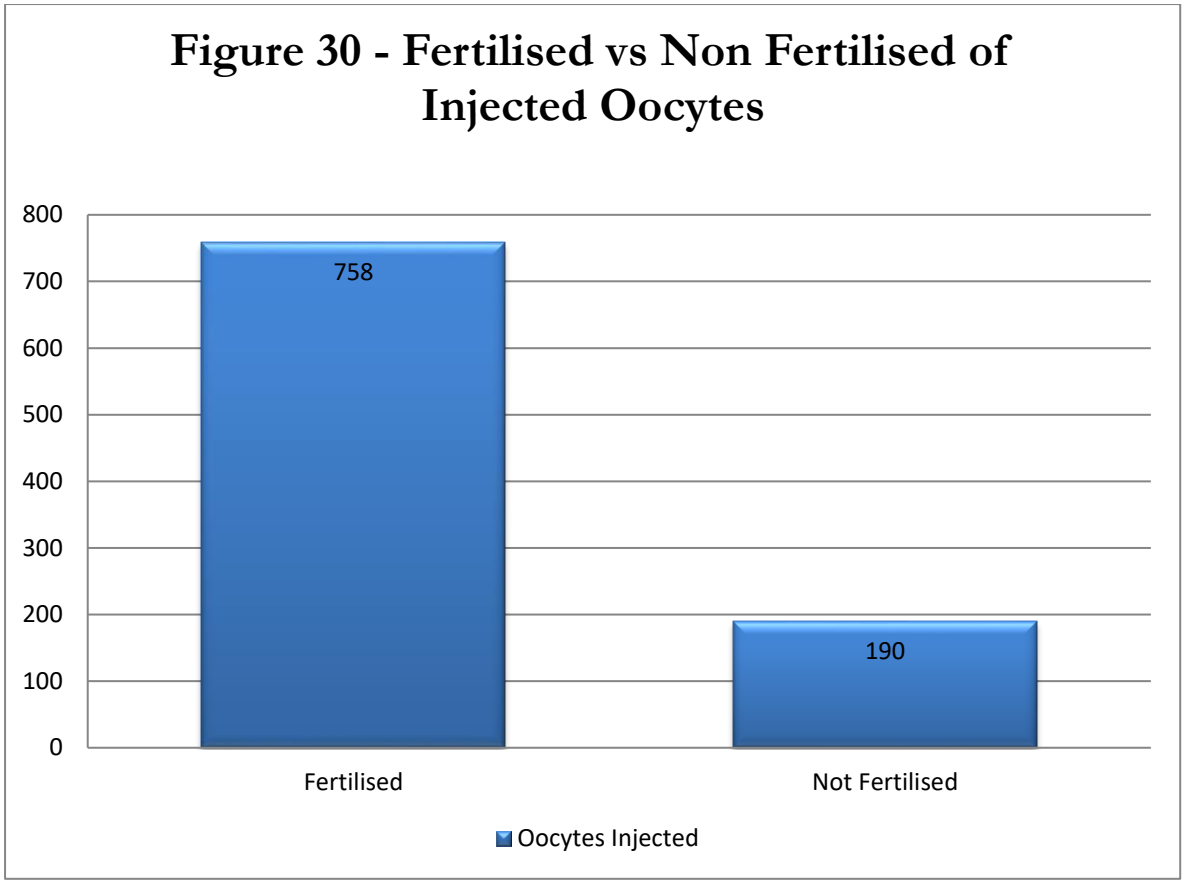


Figure 30 - Fertilised vs Non Fertilised of Injected Oocytes
800
700
600
500
400
300
200
100
0
758
190
Fertilised
Not Fertilised
Oocytes Injected

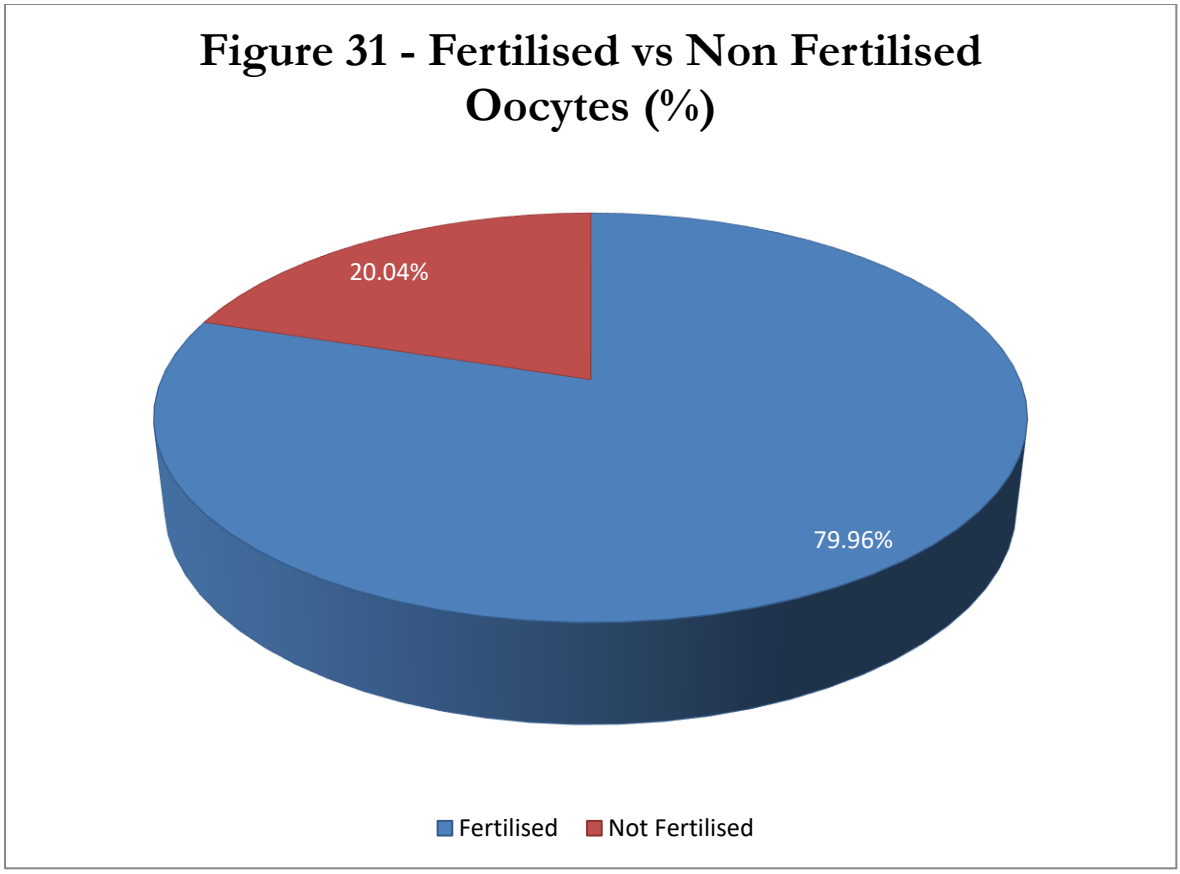


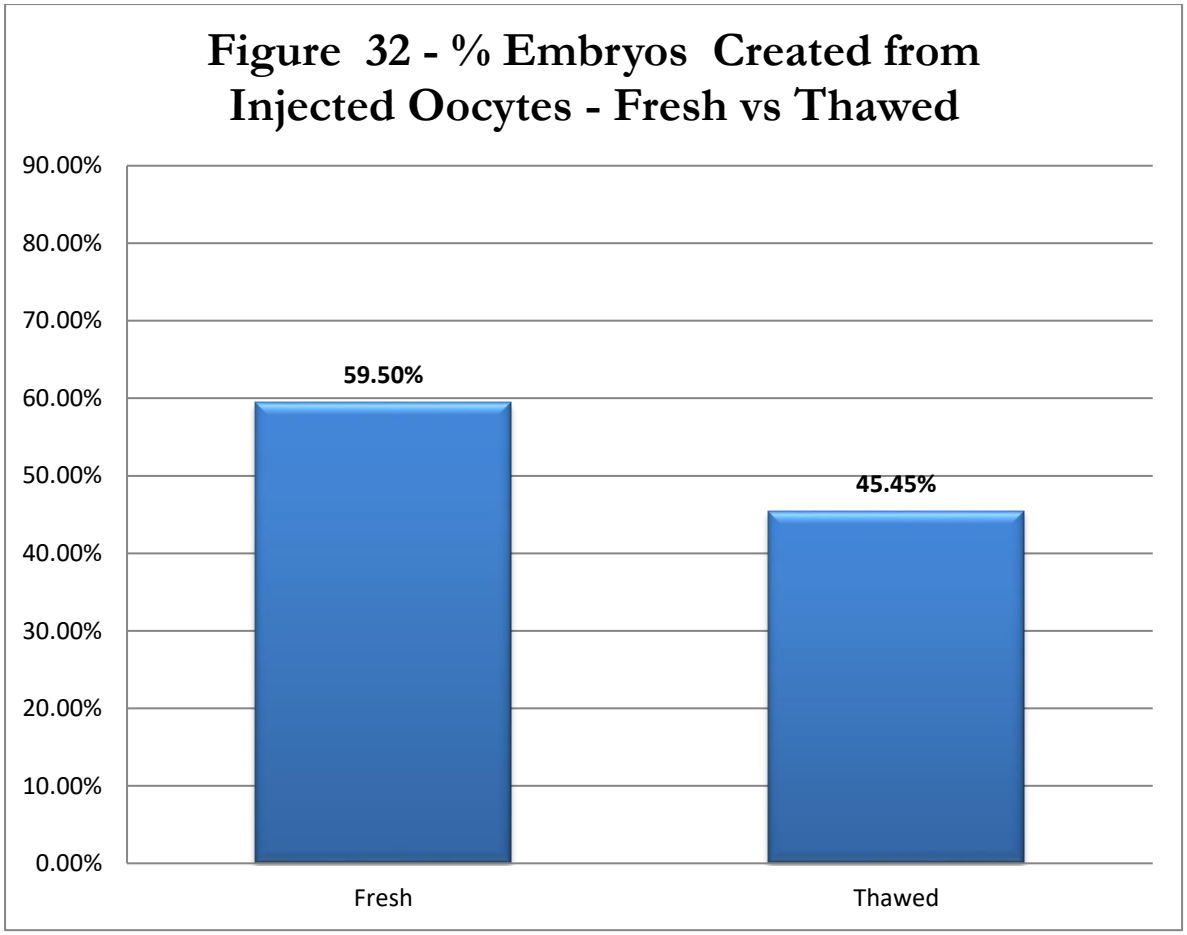
Figure 31 - Fertilised vs Non Fertilised Oocytes (%)
20.04%
79.96%
Fertilised
Not Fertilised

Out of the seven hundred and fifty-eight (758) fertilised oocytes, embryologists reported that a total twenty-two (22) fertilised oocytes had arrested whilst in the incubation phase, they further reported that one hundred and seventy-five (175) of the remaining embryos had also arrested during the incubation phase. One hundred and sixty-six (166) of these were from fresh oocyte cycles whilst only nine (9) arrested embryos were from a thawed oocyte cycle.

The arrested embryos were reported as eighty-seven (87) from cycles at MDH ART Clinic and another eighty-eight (88) embryos arrested at the private facility HOPE Fertility and IVF. This resulted in the creation of a total of five hundred and sixty-one (561) embryos, five hundred and fifty-one (551) from fresh oocytes and ten (10) from thawed oocytes. Most of these created embryos, three hundred and eighty-four (384) were created from cycles carried out at the MDH ART Clinic whilst the remaining one hundred and seventy-seven (177) were created from cycles carried out at the HOPE Fertility and IVF Clinic. (Table 15 & Figure 32).

Table 15. Embryos Created

Type of Cycle	Oocytes Injected	Embryos Created	Created %
Fresh	926	551	59.50%
Thawed	22	10	45.45%
Total	948	561	



Noteworthy is the fact, that during this calendar year, as more thawed oocytes cycles were carried out in the private facility HOPE Fertility and IVF, the rate of embryos created from injected oocytes from thawed cycles registered an increase of 9.74% over the 35.71% reported last year, thus this year's figures show a registered result of 45.45%. The rate of embryos created from injected fresh oocytes has decreased by 3.36% from the 62.86% reported in 2021 to 59.50% as reported for this year.

8.4. Embryo Transfers

The risk of a multiple birth is in large part determined by the number of embryos transferred back during IVF cycle treatment. Nowadays single embryo transfer has become common practice with a maximum of two embryos transferred.

With the introduction of the Principal Act which came into force in 2013, three embryos were allowed to put back if permission was sought from and granted by the Authority in that particular IVF cycle. In 2018, the amendments to the Embryo Protection Act came into force banning the use of triple embryos transfers. The combination of coming into effect of these policies and concerted efforts across the fertility sector led to fewer multiple births as a result. This led to restricting the birth of triplets. Multiple births remain a health risk for IVF patients and babies, but the decreasing multiple birth rate means that IVF is a safer treatment.

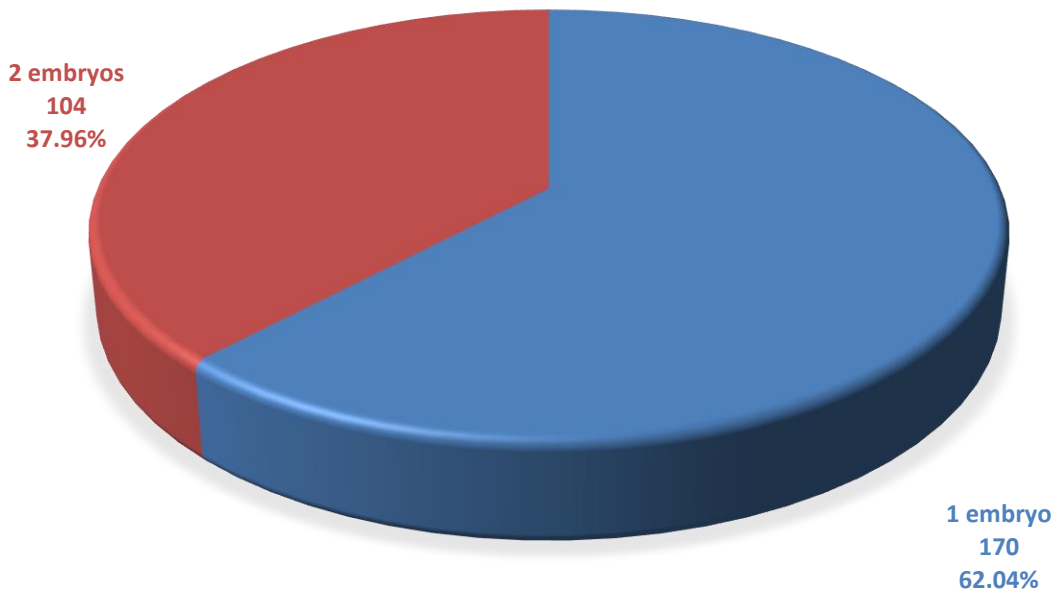
Out of the five hundred and sixty-one (561) fresh embryos created, four hundred and ninety-one (491) embryos were cryopreserved, thus only seventy (70) embryos were transferred from fresh and thawed oocyte cycles. Another three hundred and sixteen (316) embryos from those that were previously cryopreserved were removed from storage for transfer, eight (8) of which did not survive the thawing process. Thus, a total of three hundred and seventy-eight (378) embryos were eventually transferred that could lead to a pregnancy.

There was a total of seven (7) prospective parents who had no Embryo Transfer affected, as the oocytes they had injected failed to fertilize or else the fertilised oocytes/embryos arrested.

The three hundred and seventy-eight (378) embryos were transferred in two hundred and seventy-four (274) treatment cycles that could result in a pregnancy. Two hundred and twenty-seven (227) of these treatment cycles were carried out at MDH ART Clinic whilst forty-eight (47) treatment cycles were carried out at the private facility HOPE Fertility and IVF Clinic.

Out of the two hundred and seventy-five (274) prospective parents who had viable embryos to transfer, one hundred and seventy (170) of them or 62.04 % had a single embryo transferred. Whilst the remaining one hundred and four (104) or 37.96 %, of prospective parents had two embryos transferred, the maximum allowed by law (Figure 33).

Figure 33 - Embryos Transferred per Cycle



8.5. Embryo Transfers per Type of Cycle

Out of the two hundred and seventy-four (274) embryo transfer procedures carried out, forty (40) were fresh oocytes cycles, the majority, thirty-three (33) of which were carried out at the HOPE Fertility and IVF and seven (7) fresh oocytes cycles were carried out at the MDH ART Clinic. There were no embryo transfers from thawed oocyte cycles as the embryos developed had arrested prior to transfer. The remaining two hundred and thirty-four (234), where thawed embryos cycles, the majority two hundred and twenty (220) of which were carried out at the MDH ART Clinic, and fourteen (14) thawed embryo transfers were carried out at the HOPE Fertility and IVF. (Table 16 and Figure 34).

Table 16. Cycles with Embryo Transfer per Type of Cycle (%)

Type of Cycle	MDH ART CLINIC	Cycles with Embryo Transfer	Transferred %	HOPE FERTILITY AND IVF	Cycles with Embryo Transfer	Transferred %
Fresh Oocytes	144	7	4.86%	53	33	62.26%
Thawed Oocytes	0	0	0.00%	5	0	0.00%
Thawed Embryos	220	220	100.00%	14	14	100.00%
Total	364	227	62.36%	72	47	65.28%

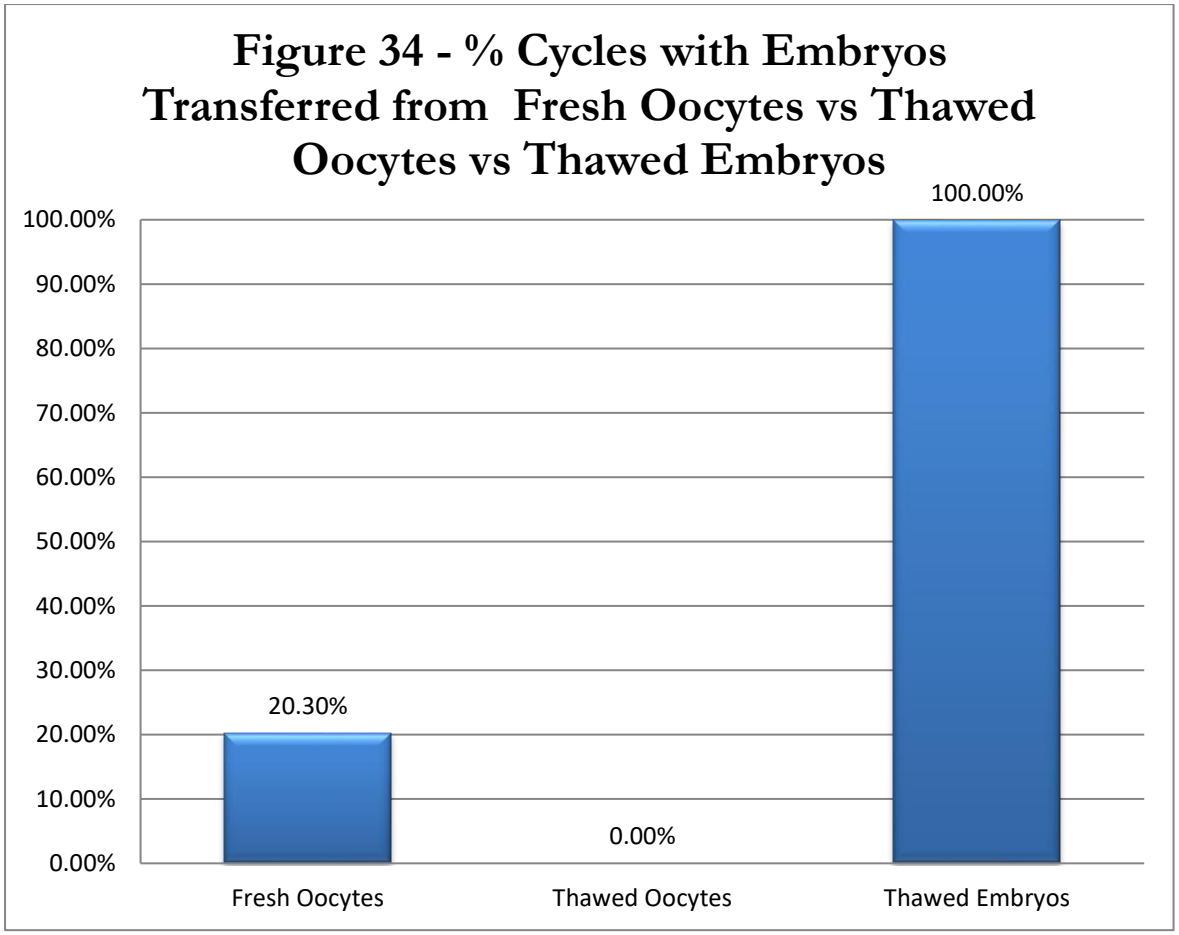


Figure 34 - % Cycles with Embryos Transferred from Fresh Oocytes vs Thawed Oocytes vs Thawed Embryos
100.00%
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
20.30%
0.00%
100.00%
Fresh Oocytes
Thawed Oocytes
Thawed Embryos

9. TREATMENT CYCLE OUTCOMES

9.1. Pregnancies

Out of the Two hundred and seventy-four (274) treatment cycles that could lead to a pregnancy, carried out in 2022, there were twenty-three (23) reported pregnancies from Fresh oocyte cycles, no pregnancies were reported from thawed oocyte cycle and sixty-seven (67) pregnancies from Thawed embryo cycles.

The resulting 90 pregnancies account for 32.85% success which is 6.56% Higher than the pregnancy rate for 2021 and **14.47% Higher** than the pregnancy rate for 2020. (Table 17 and Figure 35).

Table 17. Cycle Outcome

Type	Outcome	NHS	Self-Funded	Total	% Outcome by Type	% Outcome	% Outcome of Pregnancies
Fresh Oocytes	Not Pregnant	7	10	17	42.50%	42.50%	
Fresh Oocytes	Miscarriage	0	2	2	5.00%	57.50%	8.70%
Fresh Oocytes	Live Birth	0	6	6	15.00%		26.09%
Fresh Oocytes	Expected	0	15	15	37.50%		65.22%
Thawed Embryos	Not Pregnant	160	7	167	71.37%	71.37%	
Thawed Embryos	Miscarriage	11	1	12	5.13%	28.63%	17.91%
Thawed Embryos	Live Birth	26	0	26	11.11%		38.81%
Thawed Embryos	Expected	23	6	29	12.39%		43.28%

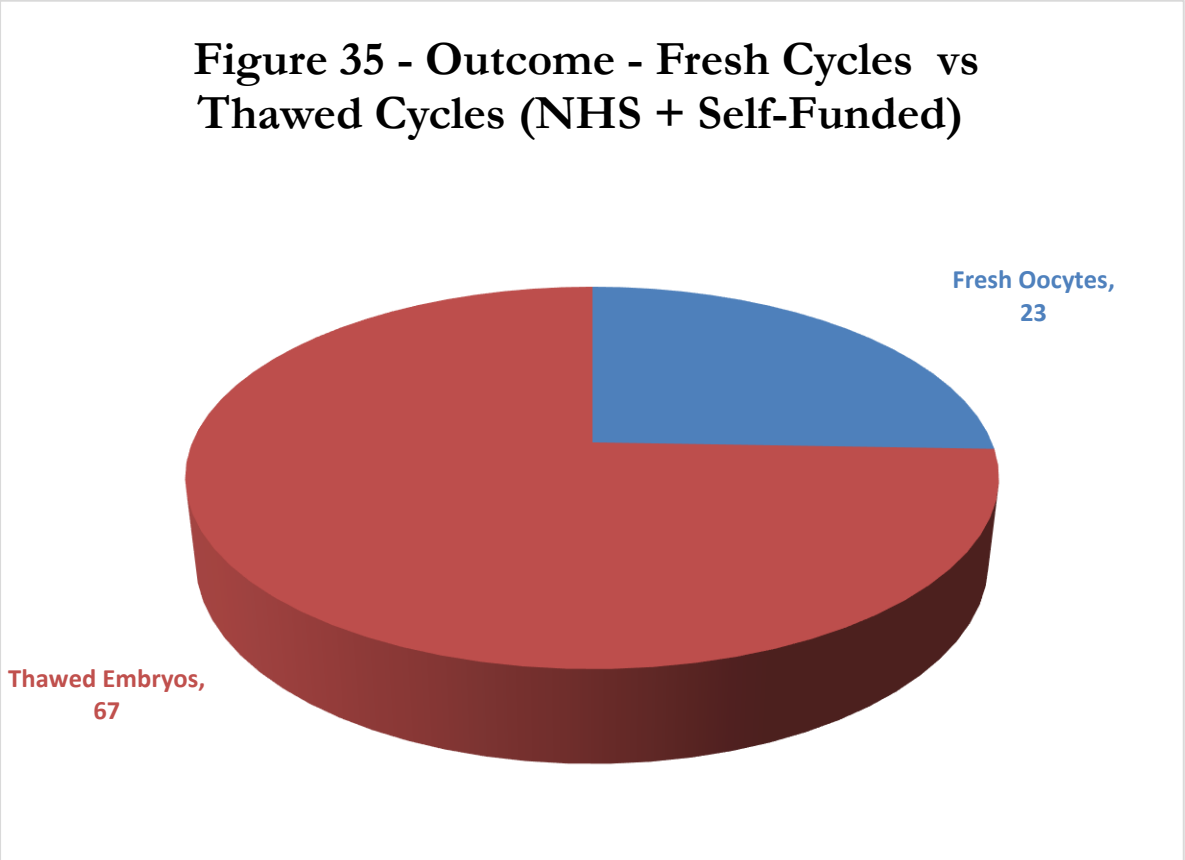
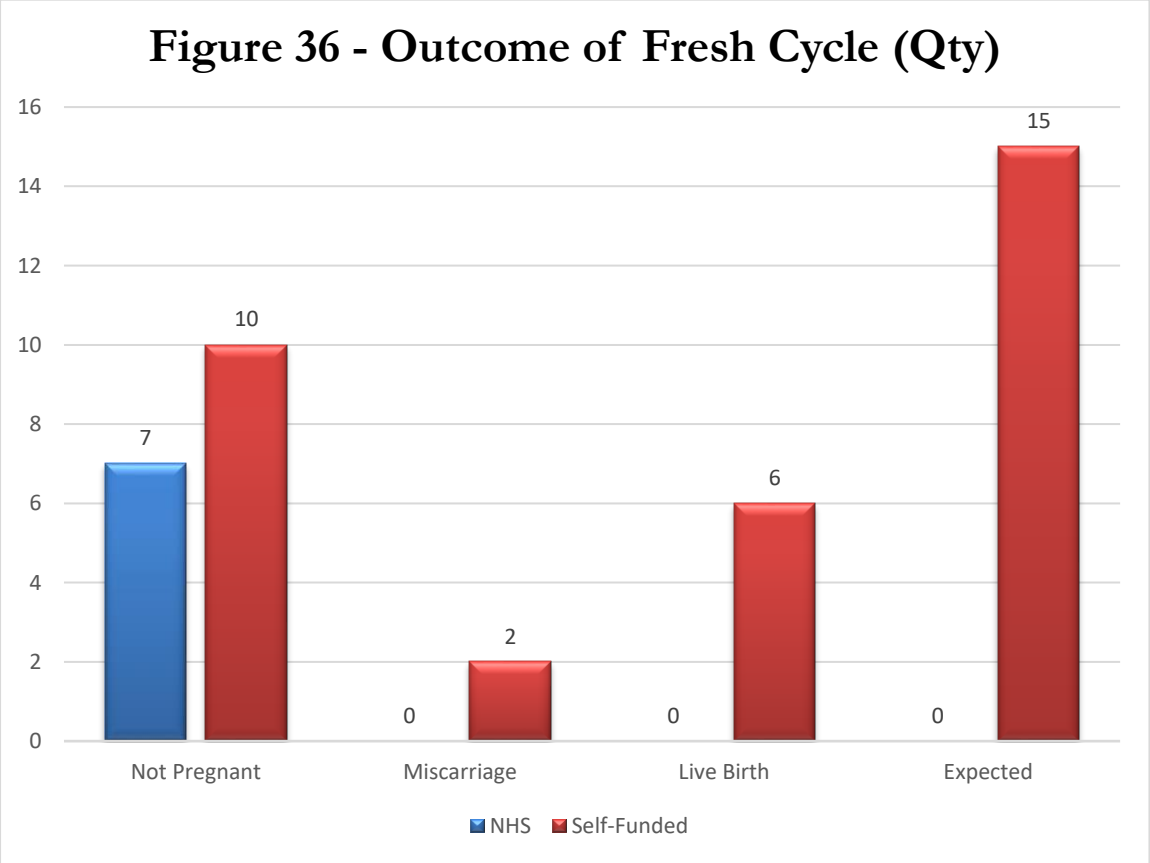


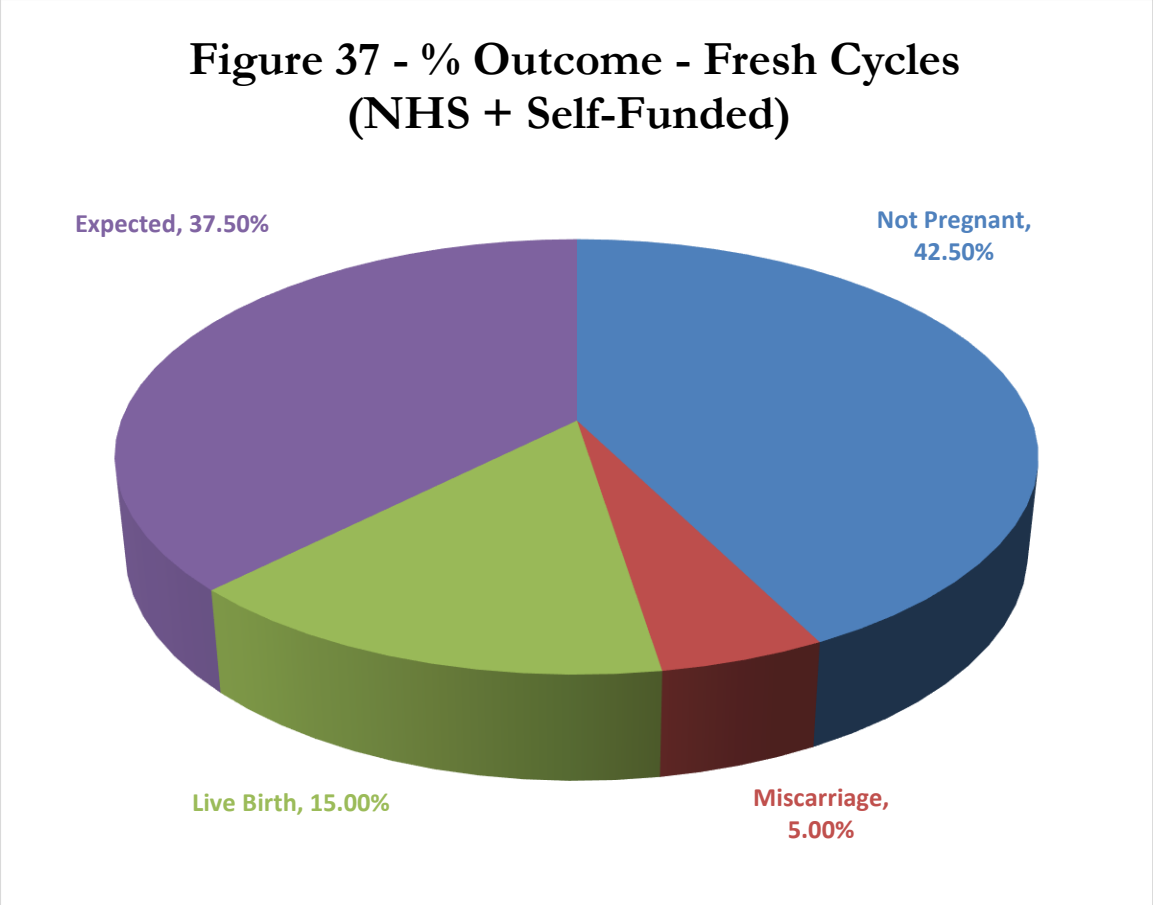
Figure 35 - Outcome - Fresh Cycles vs Thawed Cycles (NHS + Self-Funded)
Fresh Oocytes, 23
Thawed Embryos, 67

9.2. Cycle Outcomes – Fresh vs Thawed Embryos

Twenty-three (23) prospective parents, or **57.50%** of those undergoing Fresh oocyte cycles managed to get pregnant, **with a registered increase in success of 23.41% over figures of 2021 and an increase in success of 43.61% over figures of 2020.**

Out of these twenty-three (23) pregnancies, six (6) prospective parents or 26.09% had a live birth, two (2) prospective parents suffered a miscarriage, while the remaining fifteen (15) prospective parents or 65.22% are still expecting to give birth. (Figures 36 and 37).





Whilst at the MDH ART Clinic no pregnancy was registered, at the private facility HOPE Fertility and IVF, a total of twenty-three (23) prospective parents out of the thirty-three (33) prospective parents undergoing a fresh cycle became pregnant. Thus, this private facility registered a **69.70% success pregnancy rate from fresh cycles.**

Sixty-seven (67) prospective parents who underwent a thawed embryo cycle managed to get pregnant. Out of these sixty-seven (67) pregnancies, twelve (12) prospective parents suffered a miscarriage, twenty-six (26) prospective parents or 38.81% had a live birth, whilst the remaining twenty-nine (29) prospective parents or 43.28% are still expecting to give birth (Figures 38 and 39).

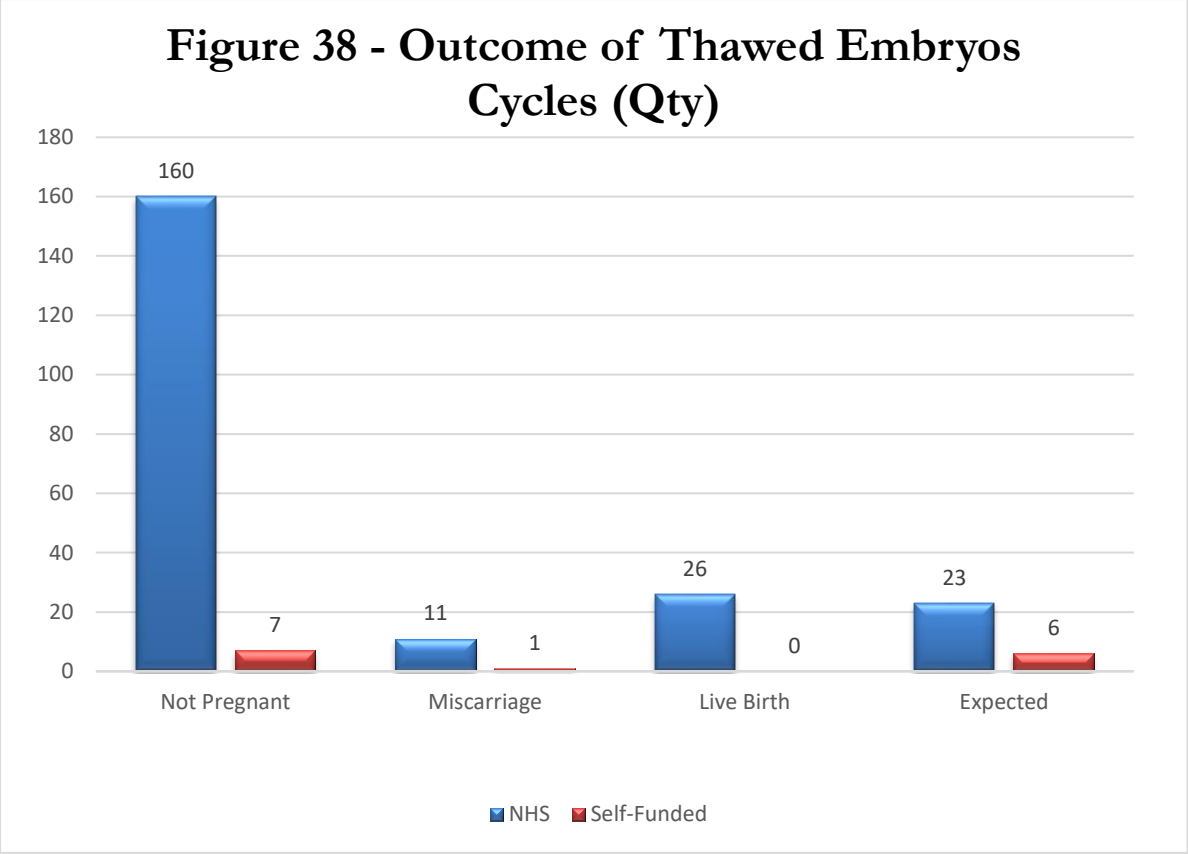


Figure 38 - Outcome of Thawed Embryos Cycles (Qty)
180
160
140
120
100
80
60
40
20
0
160
7
11
1
26
0
23
6
Not Pregnant
Miscarriage
Live Birth
Expected
NHS
Self-Funded

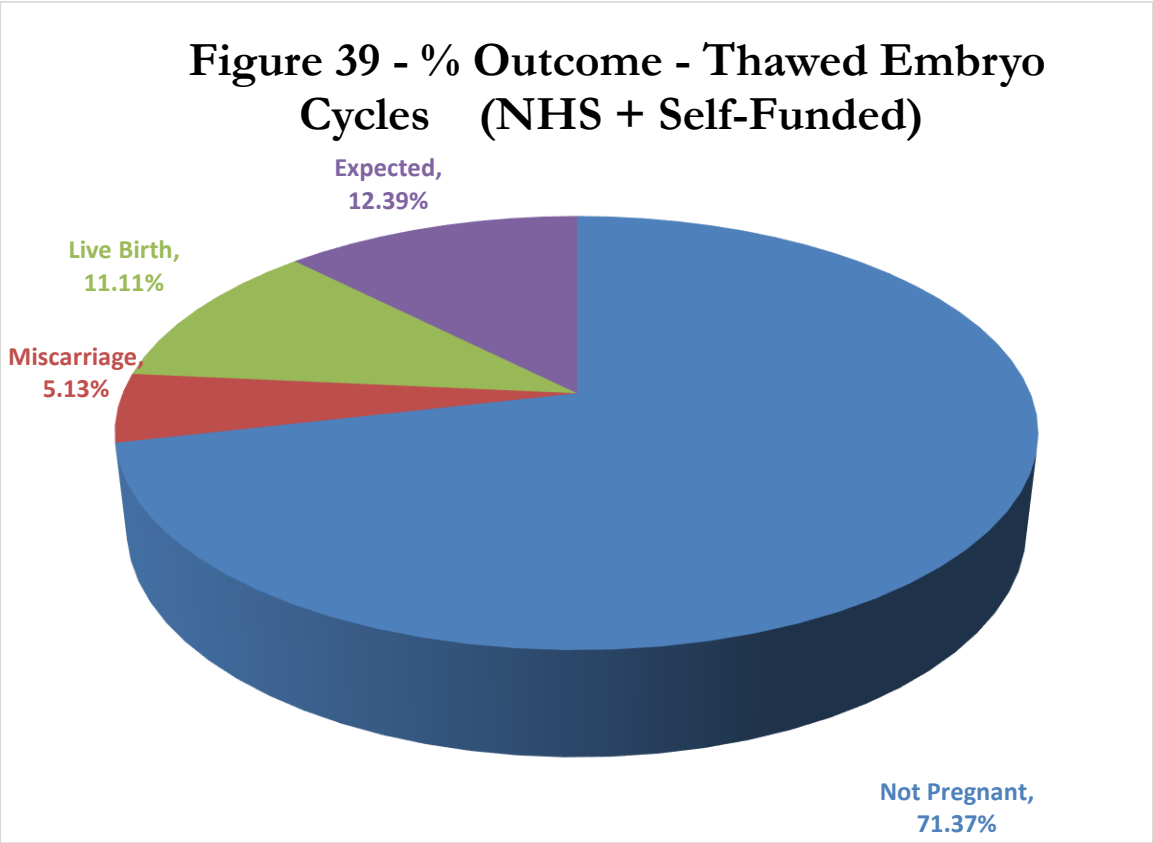


Figure 39 - % Outcome - Thawed Embryo Cycles (NHS + Self-Funded)
Expected, 12.39%
Live Birth, 11.11%
Miscarriage, 5.13%
Not Pregnant, 71.37%

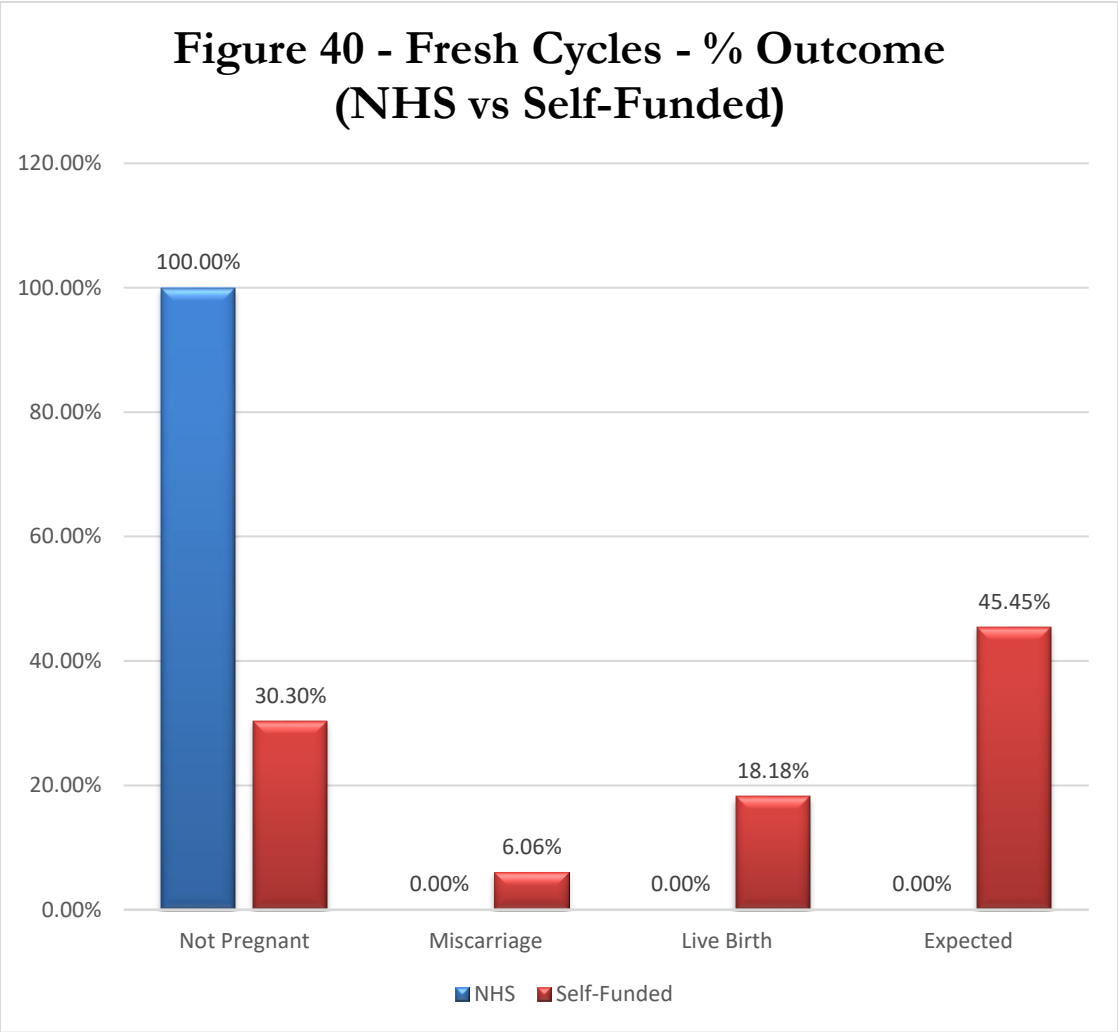
Whilst MDH ART Clinic registered a pregnancy rate of **27.27% from thawed Embryo Cycles an increase of 3.14%** over the figures registered for 2021 by MDH ART Clinic. The private facility HOPE Fertility and IVF registered a **50.00% success pregnancy rate.**

As a result, in 2022 the pregnancy rate for Thawed Embryo Cycles was 28.63%, which registered an increase of 3.97% over the figures which were registered for 2021.

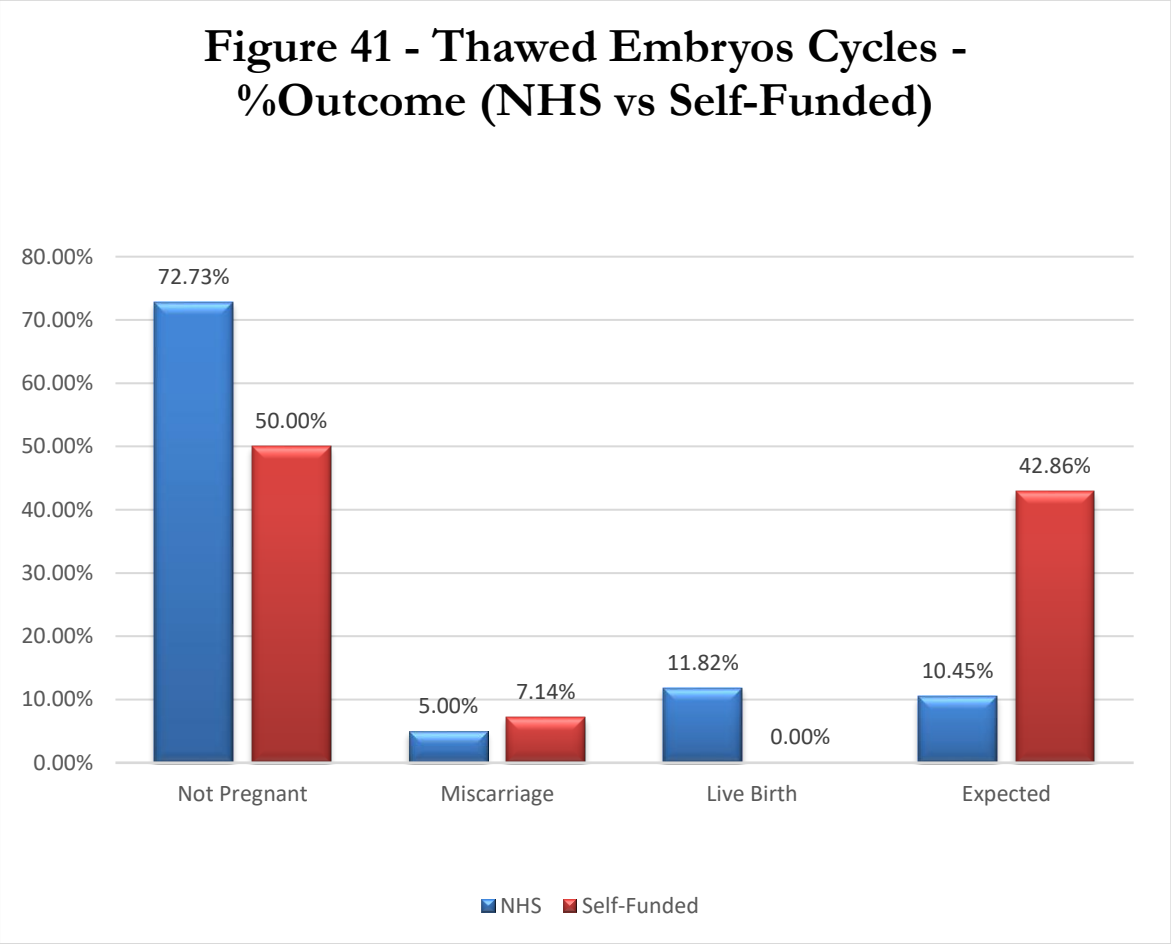
It is noteworthy to point out that during 2022, the pregnancy success rate for Fresh oocyte cycles was 28.87% higher than that of Thawed Embryo Cycles.

9.3. Cycle Outcomes – NHS vs Self-Funded

The sum of live and expected births from Fresh cycles carried out at MDH ART Clinic was nil, as no pregnancies were registered from the fresh oocytes cycles carried out in 2022. Whilst the sum of live and expected births from Fresh oocytes cycles registered by the private clinics was of twenty-one (21) or 63.63% (Figure 40).



The sum of live and expected birth rate from cycles carried out with thawed embryo transfers at the MDH ART Clinic was of 22.27%, this was due to the fact that MDH reported eleven (11) miscarriages from the sixty (60) pregnancies registered for these cycles. The sum of live and expected birth rate from cycles carried out with thawed embryo transfers at the HOPE Fertility and IVF was of 42.86%, this was due to the fact that the private facility reported one (1) miscarriage from the pregnancies registered for these cycles. (Figure 41).

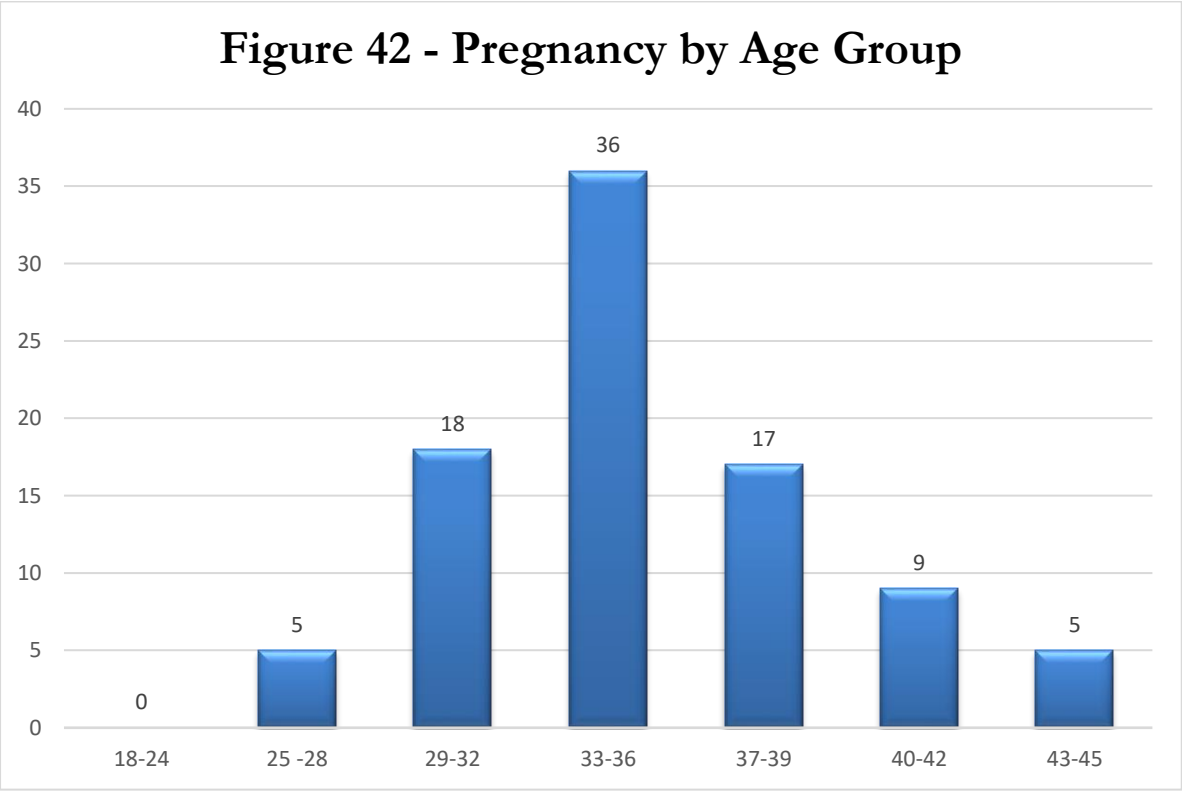


The Overall pregnancy rate for **MDH ART Clinic** was of **26.43%** whilst that of the **Hope Fertility and IVF Clinic was of 63.83%. With the average pregnancy rate for Malta for 2022 being 32.85%, 6.56% Higher** than that for the year 2021.

9.4. Pregnancies by Age

In 2022, ninety (90) pregnancies were reported across all age groups. The highest number of pregnancies reported was for women in the 33–36-year-old bracket, this is in line with figures reported in the last four years. (Figure 42). This was however not reflected in the pregnancy rate, as percentage of cycles per age group was highest for women aged 25-28 at 62.50% (Figure 43).

This is in line with figures reported in the last years, where the highest pregnancy rate as percentage of cycle was reported in the 25-28 age group. It appears that in 2022 and as reported in 2021 and 2020, maternal age was one of the most important predictive factors for an IVF/ICSI procedure to result in a pregnancy.



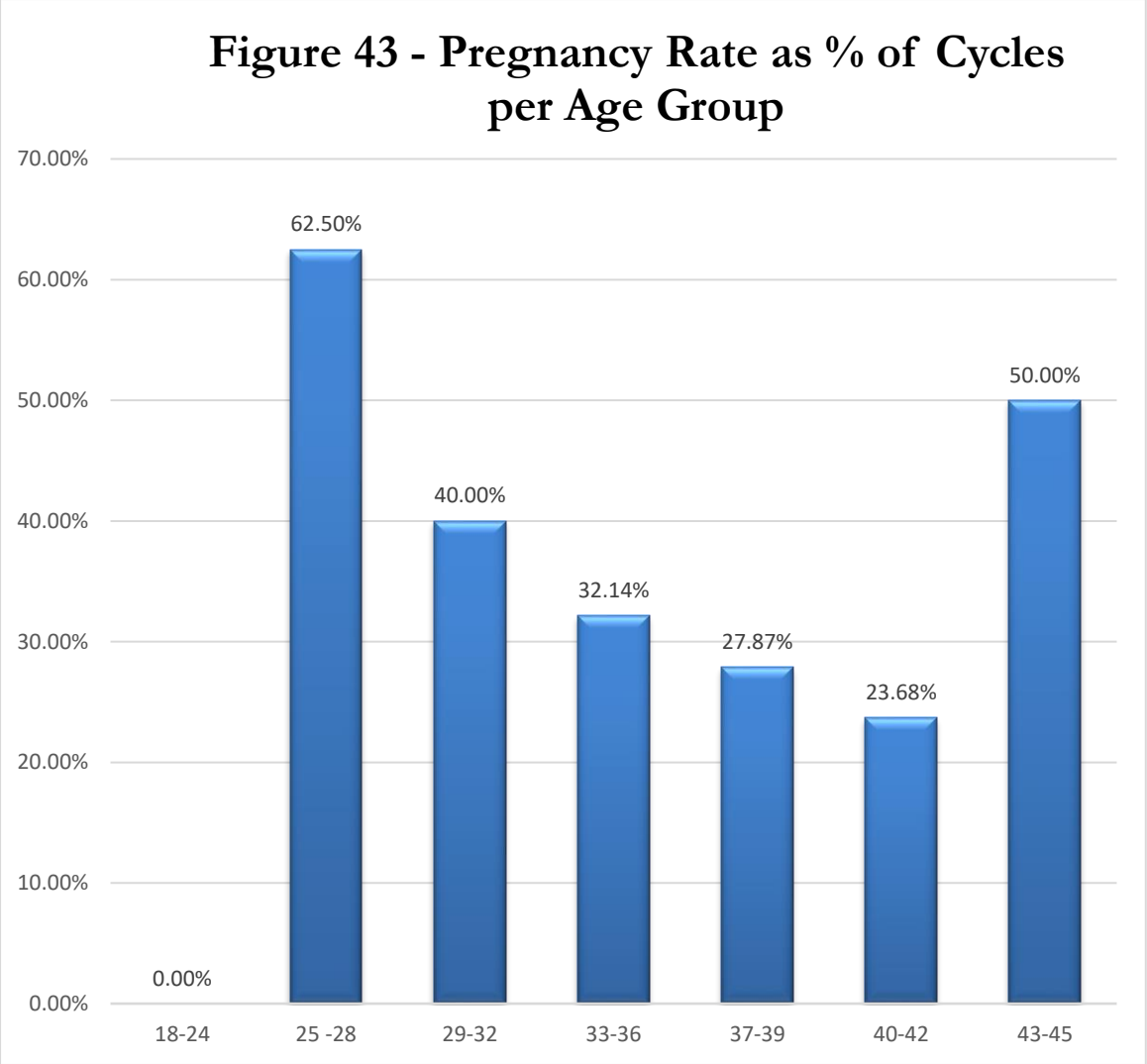


Figure 43 - Pregnancy Rate as % of Cycles per Age Group
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
0.00%
62.50%
40.00%
32.14%
27.87%
23.68%
50.00%
18-24
25 -28
29-32
33-36
37-39
40-42
43-45

9.5. Pregnancy Rate per Embryos Transferred

From a total of two hundred and seventy-four (274) prospective parents who had a treatment cycle with the possibility of an embryo transfer effected, there were ninety (90) resulting pregnancies, or 32.85%, an increase of 6.56% when compared to the previous year.

The prospective parents who were most successful at achieving a pregnancy in 2022, were those who had two (2) embryos transferred, a total of forty-seven (47) prospective parents or 45.19%, the current calendar year registered an increase of 12.99% over the 32.20% that was reported in 2021 with 2 embryos transferred.

Noteworthy to point is that there was also an increase of 8.18% in the pregnancies achieved by only one embryo transferred, from 17.11% reported during 2021 to 25.29% for 2022 with a total of forty-three (43) prospective parents achieving a pregnancy (Table 18).

Table 18. Pregnancy Rate per Embryos Transferred

Transferred Embryos	Total IVF/ICSI Procedures	Total Pregnancies	% Pregnancies
1	170	43	25.29%
2	104	47	45.19%
Total	274	90	32.85%

9.6. Pregnancy Outcome for Donor Cycles

For the very first time, since 2013, in this calendar year there were fifteen (15) cycles that had an embryo transfer following the use of donor sperm distributed from abroad. Six (6) of these cycles were carried out at the MDH ART Clinic, whilst the remaining nine (9) procedures that had an embryo transfer that could lead to a pregnancy were carried out at the HOPE Fertility and IVF Clinic.

Six (6) prospective parents, or **40.00%** of those undergoing an ICSI or embryo transfer procedure with the use of donor sperm managed to get pregnant. One (1) pregnancy was achieved at MDH ART Clinic whilst the other five (5) pregnancies were achieved from cycles carried out at the HOPE Fertility and IVF Clinic.

Out of these six (6) pregnancies, two (2) prospective parents were same-sex female couples undergoing a ROPA with the use of donor sperm, another two (2) prospective parents were same-sex female couples who made use of donor sperm only, whilst the other two (2) pregnancies were achieved by heterosexual couples making use of donor sperm.

One (1) heterosexual couple undergoing treatment at the HOPE Fertility and IVF Clinic gave birth to the first child born from donor sperm through an ICSI procedure in Malta. The other five (5) couples are still expecting to give birth. (Figure 44).

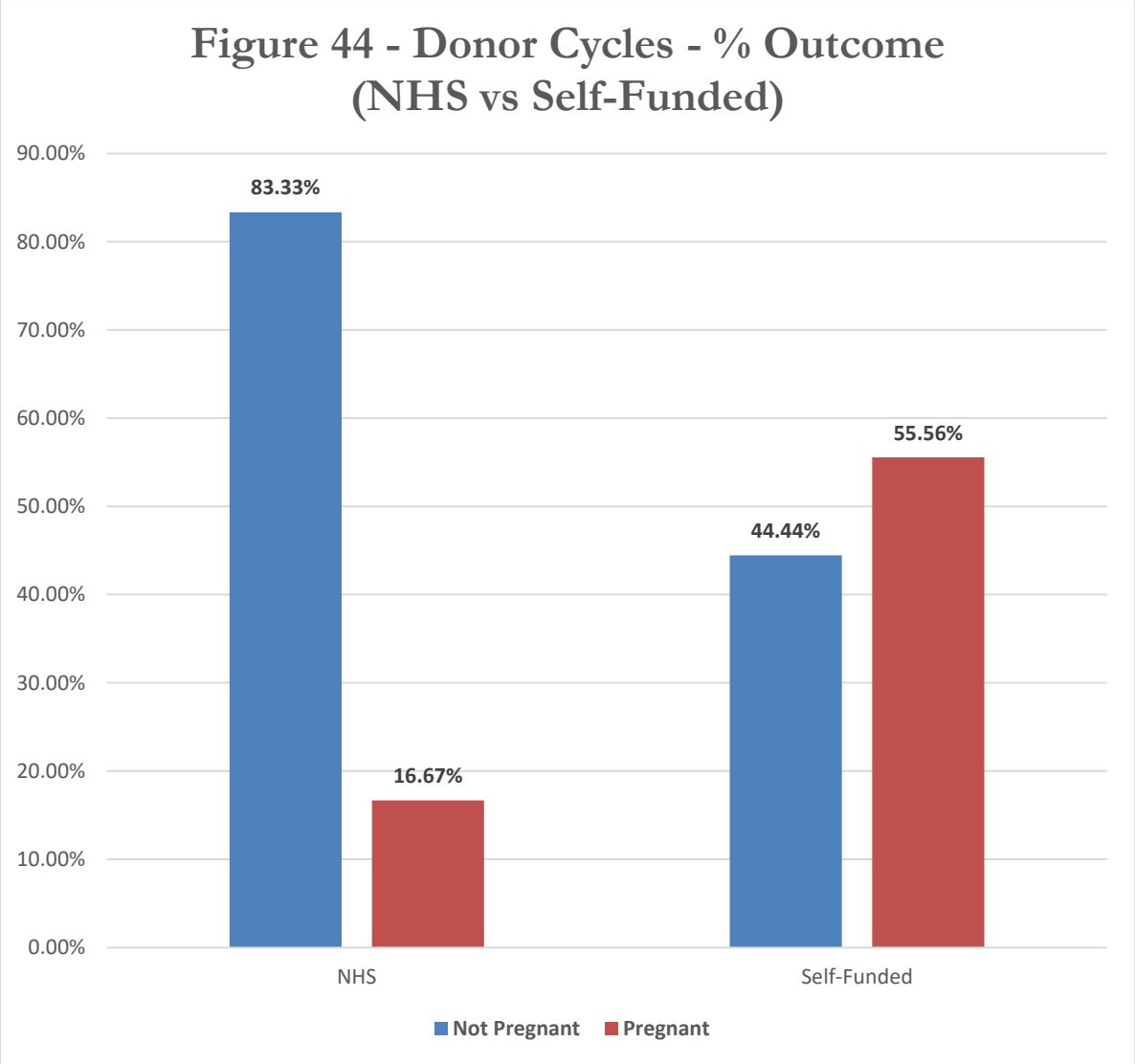


Figure 44 - Donor Cycles - % Outcome (NHS vs Self-Funded)
90.00%
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
83.33%
16.67%
44.44%
55.56%
NHS
Self-Funded
Not Pregnant
Pregnant

9.7. Pregnancy Distribution per ART Cycle Attempts

Forty-eight (48) prospective parents out of the ninety (90) prospective parents who got pregnant from cycles carried out in 2022, achieved a pregnancy on their 1st IVF/ICSI attempt, these were achieved by twenty-nine (29) prospective parents who had undergone their cycle at the ART Clinic at MDH and nineteen (19) prospective parents who self-funded their treatment at the HOPE Fertility and IVF Clinic.

Twenty-six (26) prospective parents achieved a pregnancy on their 2nd attempt, twenty (20) prospective parents had treatments at the MDH facility whilst six (6) prospective parents had the treatment carried out at the private facility.

Eleven (11) prospective parents on their 3rd attempt, achieved pregnancies from seven (7) cycles on the NHS and four (4) were self-funded.

Four (4) prospective parents achieved pregnancy on their 4th attempt, three (3) at the NHS facility and one (1) at the private facility. One (1) other prospective parent achieved a pregnancy undergoing her 5th attempt. All prospective parents undergoing their 6th and 7th attempt did not achieve a pregnancy. (Figures 45, 46 and 47).

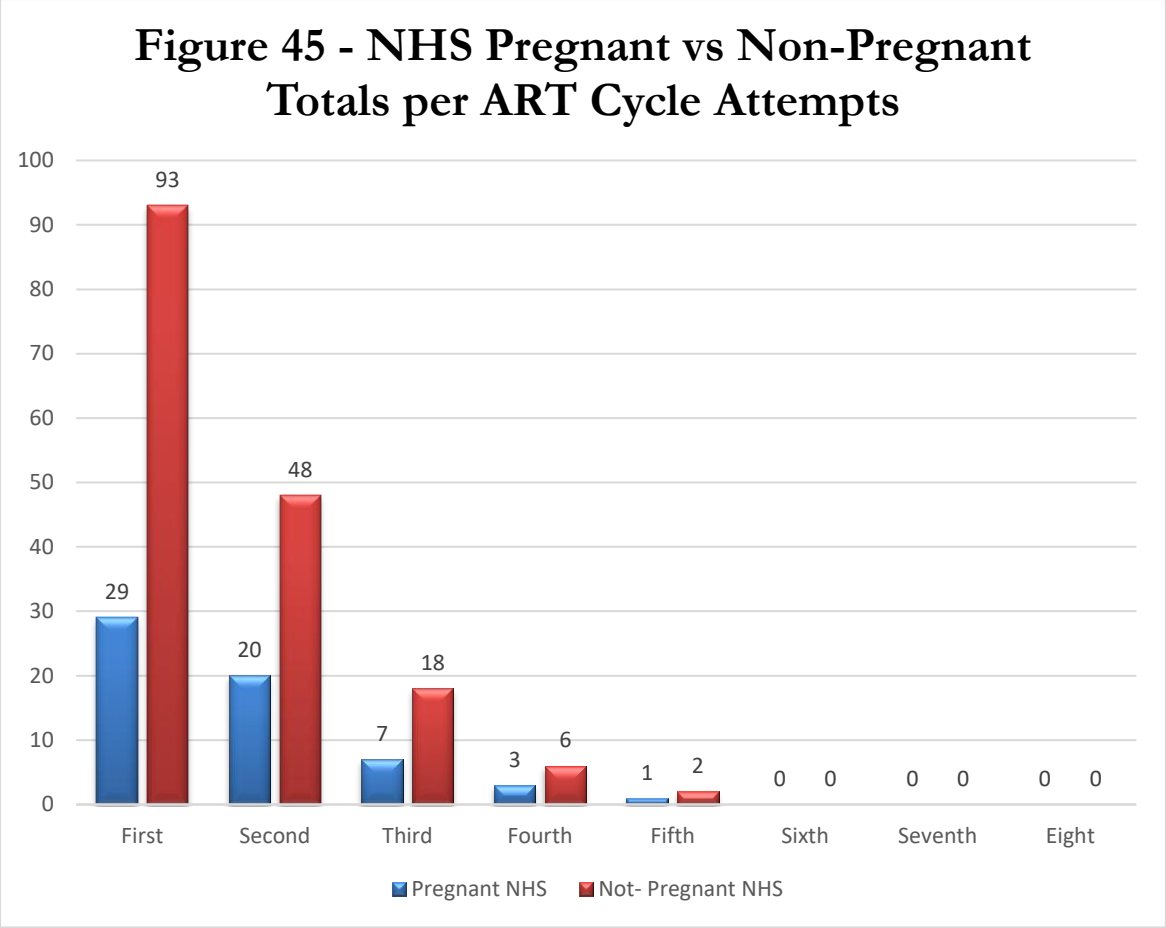


Figure 45 - NHS Pregnant vs Non-Pregnant Totals per ART Cycle Attempts
100
90
80
70
60
50
40
30
20
10
0
93
48
29
20
18
7
6
3
1
2
0 0
0 0
0 0
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eight
Pregnant NHS
Not- Pregnant NHS

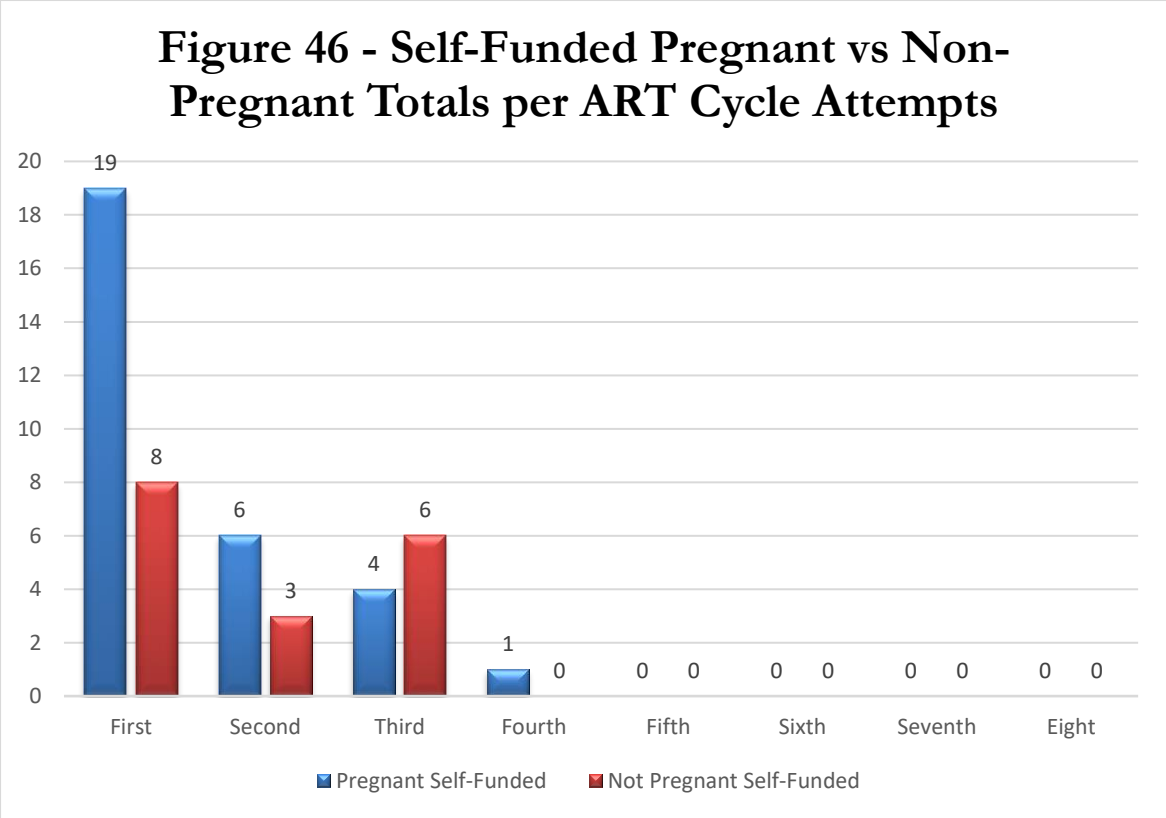


Figure 46 - Self-Funded Pregnant vs Non-Pregnant Totals per ART Cycle Attempts
20
18
16
14
12
10
8
6
4
2
0
19
8
6
3
4
6
1
0
0 0
0 0
0 0
0 0
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eight
Pregnant Self-Funded
Not Pregnant Self-Funded

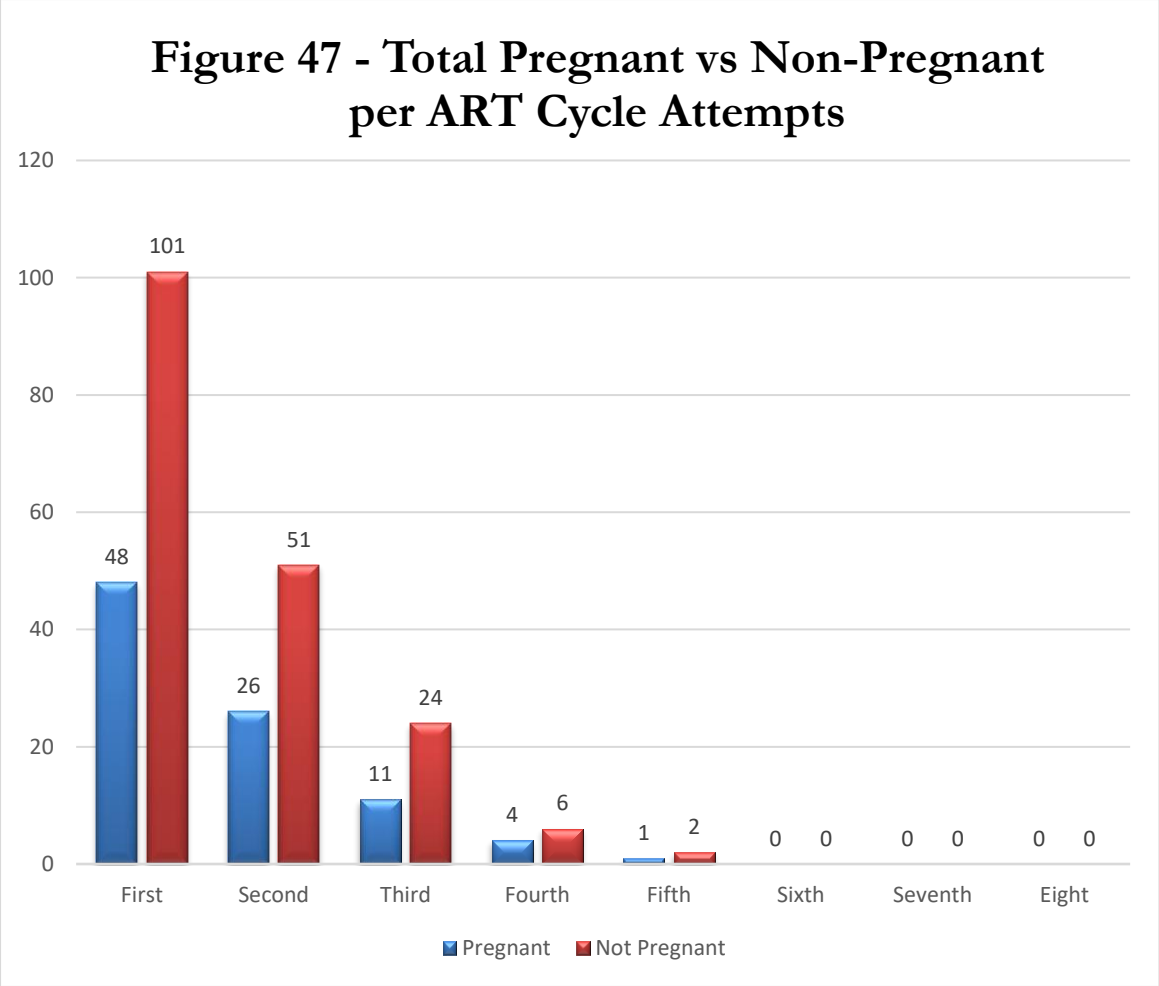
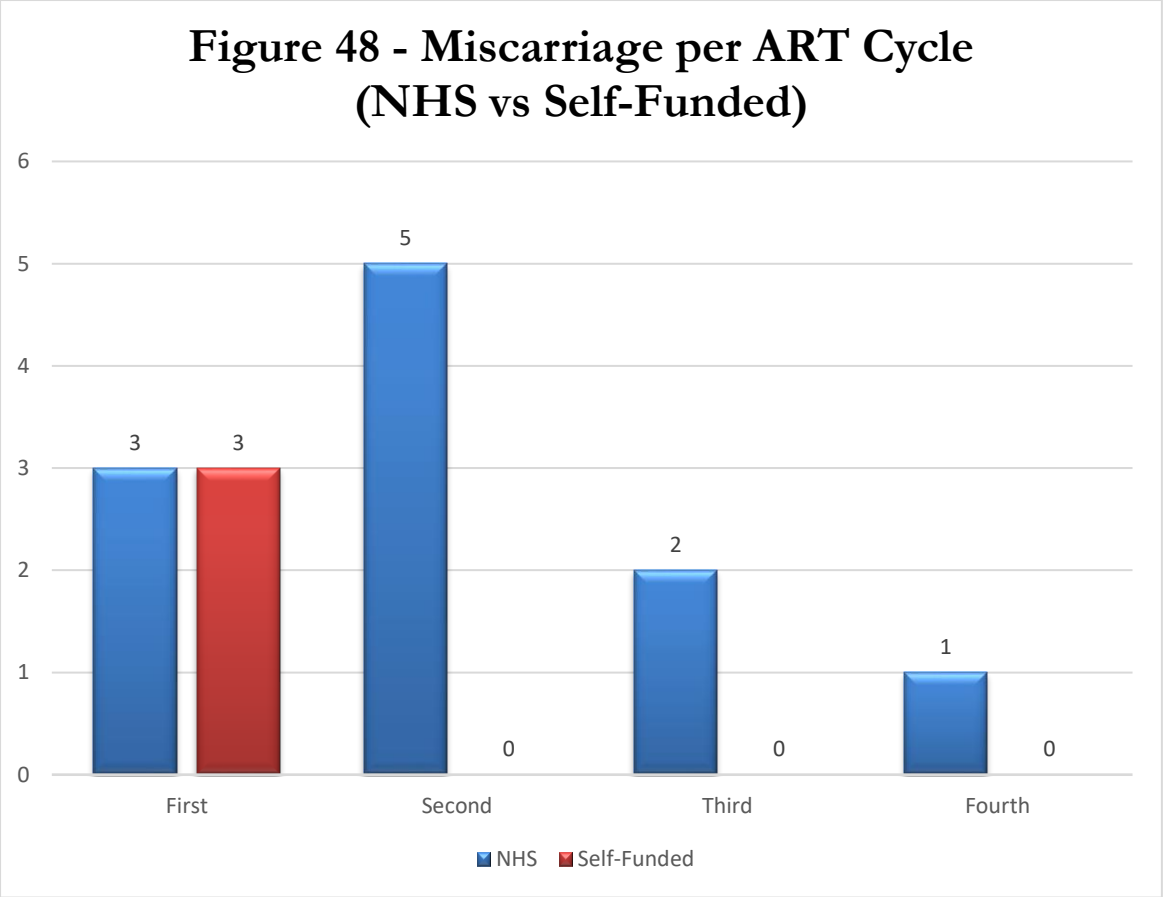


Figure 47 - Total Pregnant vs Non-Pregnant per ART Cycle Attempts
120
100
80
60
40
20
0
101
48
51
26
24
11
4
6
1
2
0
0
0
0
0
0
First
Second
Third
Fourth
Fifth
Sixth
Seventh
Eight
Pregnant
Not Pregnant

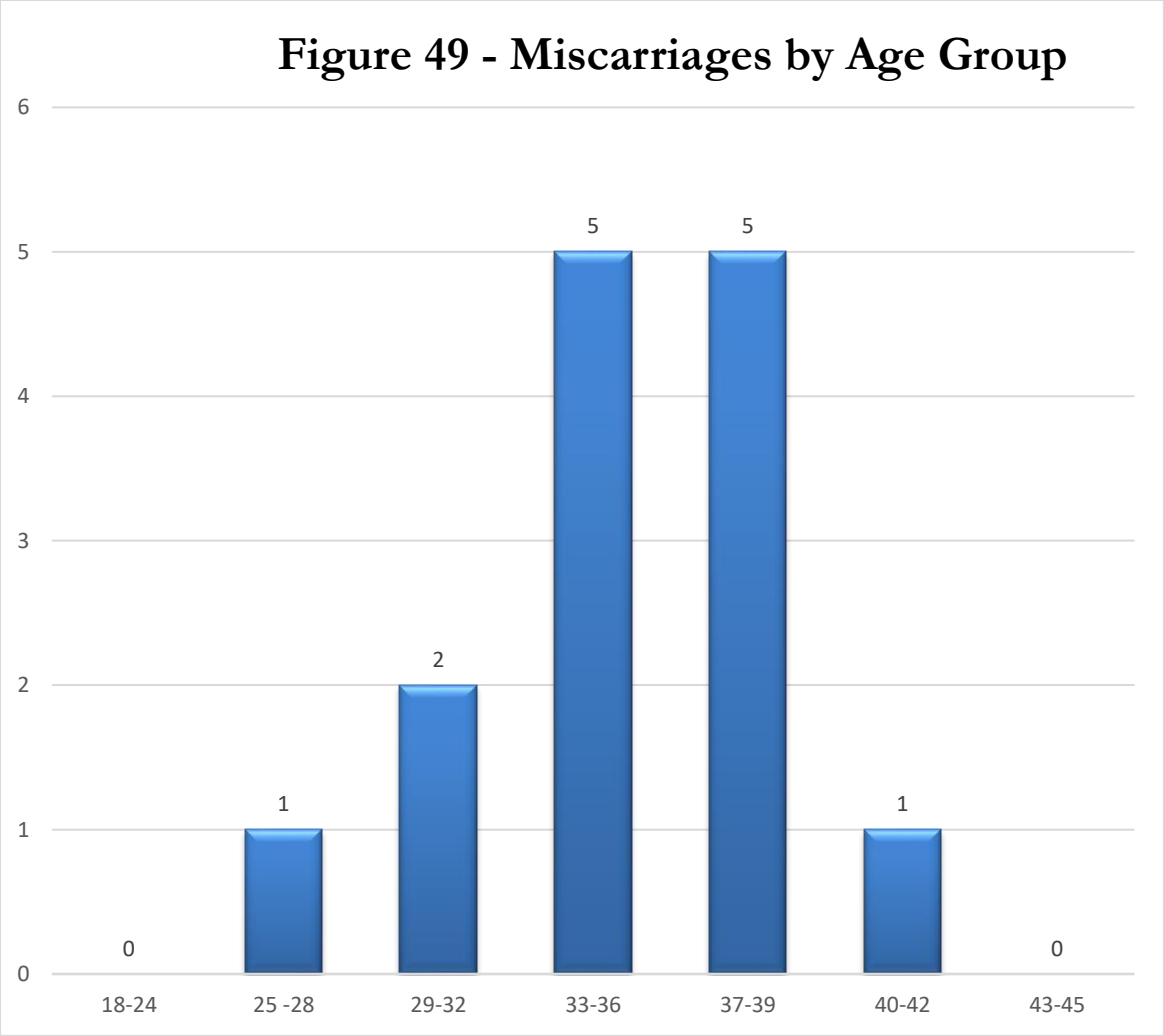
9.8. Miscarriages per ART Cycle

In 2022, a total of fourteen (14) miscarriages were reported, eleven (11) from cycles carried out at MDH ART Clinic and three (3) from the HOPE Fertility and IVF Clinic. Six (6) of the prospective parents who got pregnant on their first IVF/ICSI attempt miscarried. There were five (5) prospective parents who miscarried after a successful second IVF/ICSI attempt. Another two (2) prospective parents miscarried after getting pregnant from a 3rd attempt and the remaining one (1) prospective parent miscarried during their 4th attempt. (Figures 48).



9.9. Miscarriages by Age

Miscarriages were reported for women aged from 25 up to age 42. There was one (1) prospective parent in the 25–28-year-old bracket who suffered a miscarriage, there were two (2) reported miscarriage for women in the 29–32-year-old bracket, another five (5) miscarriages were reported in the 33–36-year-old bracket. Five (5) other miscarriages were reported for women aged 37-39. The remaining one (1) miscarriage was reported in the 40–42-year bracket. (Figures 49 and 50).



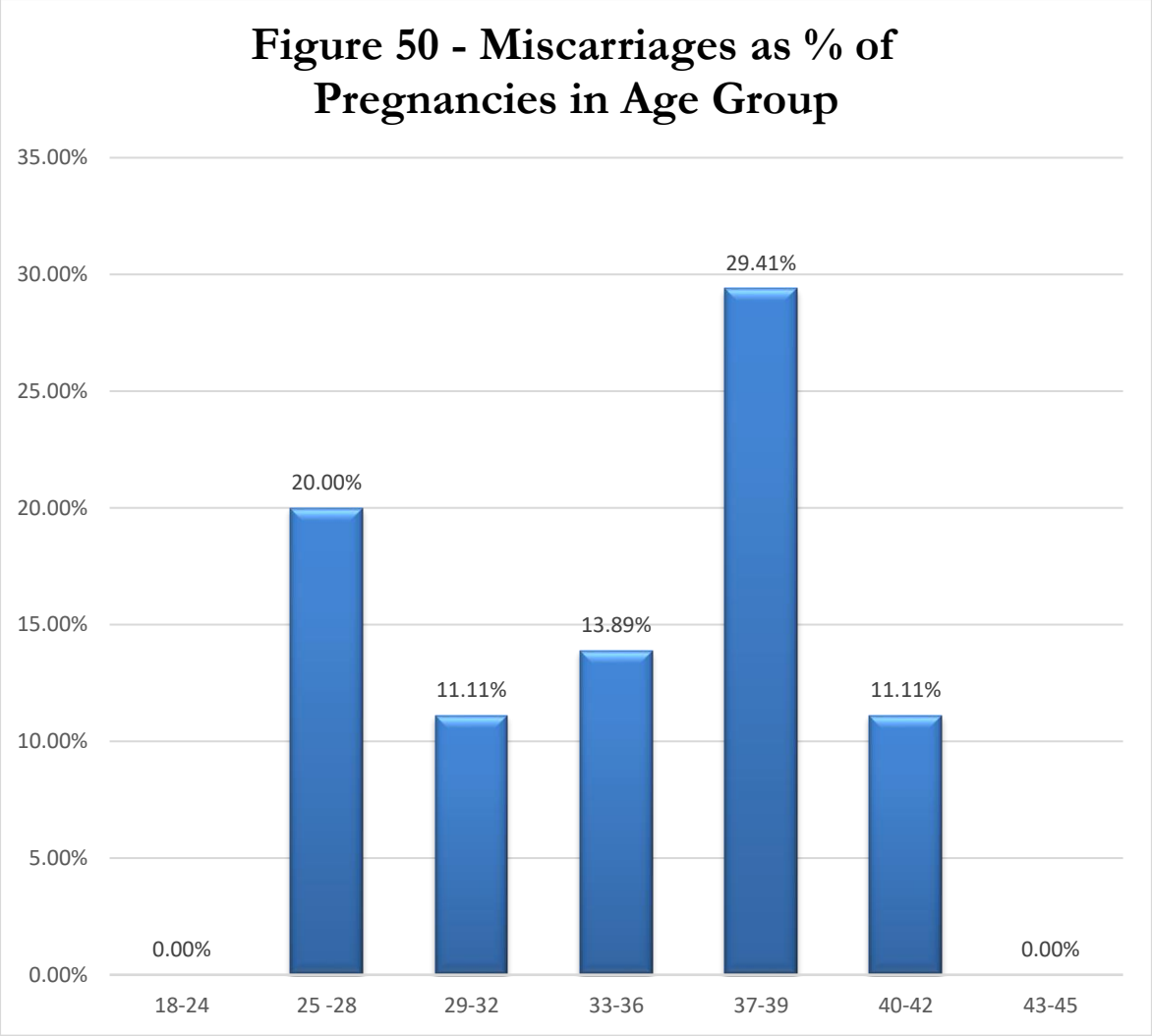
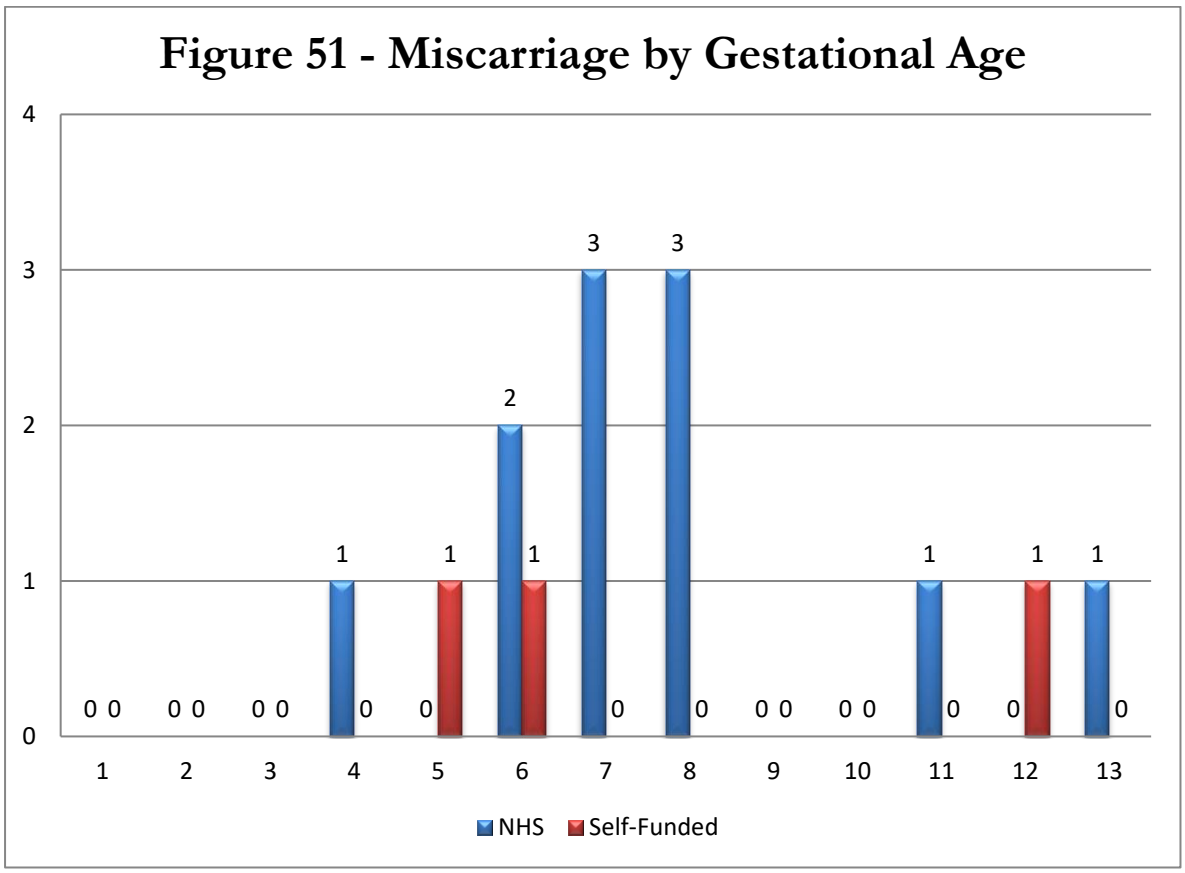


Figure 50 - Miscarriages as % of Pregnancies in Age Group
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
0.00%
20.00%
11.11%
13.89%
29.41%
11.11%
0.00%
18-24
25 -28
29-32
33-36
37-39
40-42
43-45

9.10. Miscarriages by Gestational Age

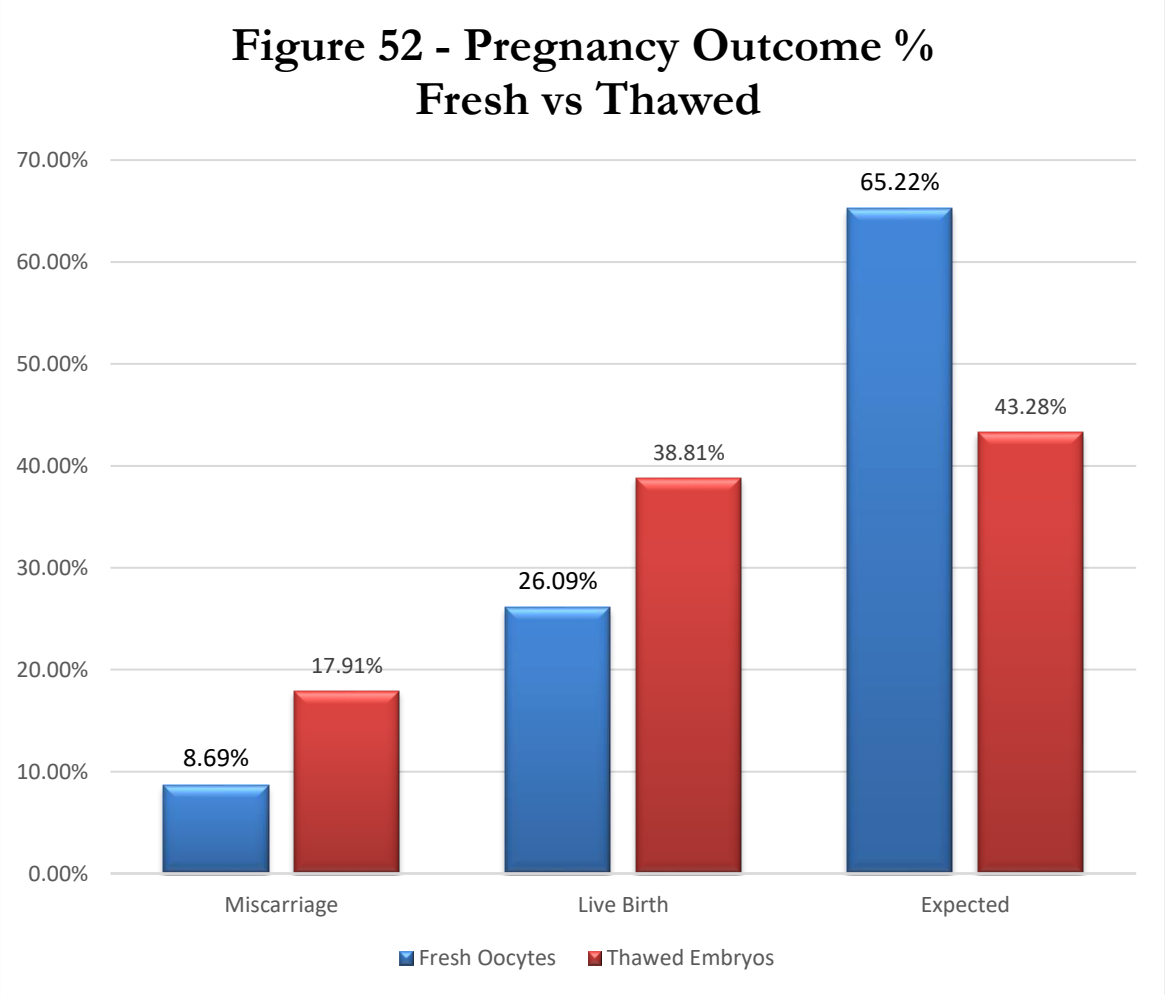
The fourteen miscarriages reported were from one (1) woman who was in her 4th week of gestation. Another one (1) woman was in her 5th week, another three (3) were in their 6th week. Three (3) other women miscarried at 7 weeks gestation, and another three (3) women miscarried at 8 weeks gestation. Three (3) other women miscarried at 11, 12 and 13 weeks gestation respectively.

One (1) woman miscarried twins, whilst the remaining, all miscarried a singleton. Three (3) other women were pregnant with twins and miscarried a singleton, as the women are still pregnant with a singleton, these miscarriages are not accounted for, as the women will still be reported in the expected live birth figures. (Figure 51).



9.11. Miscarriages from Fresh vs Thawed Cycles

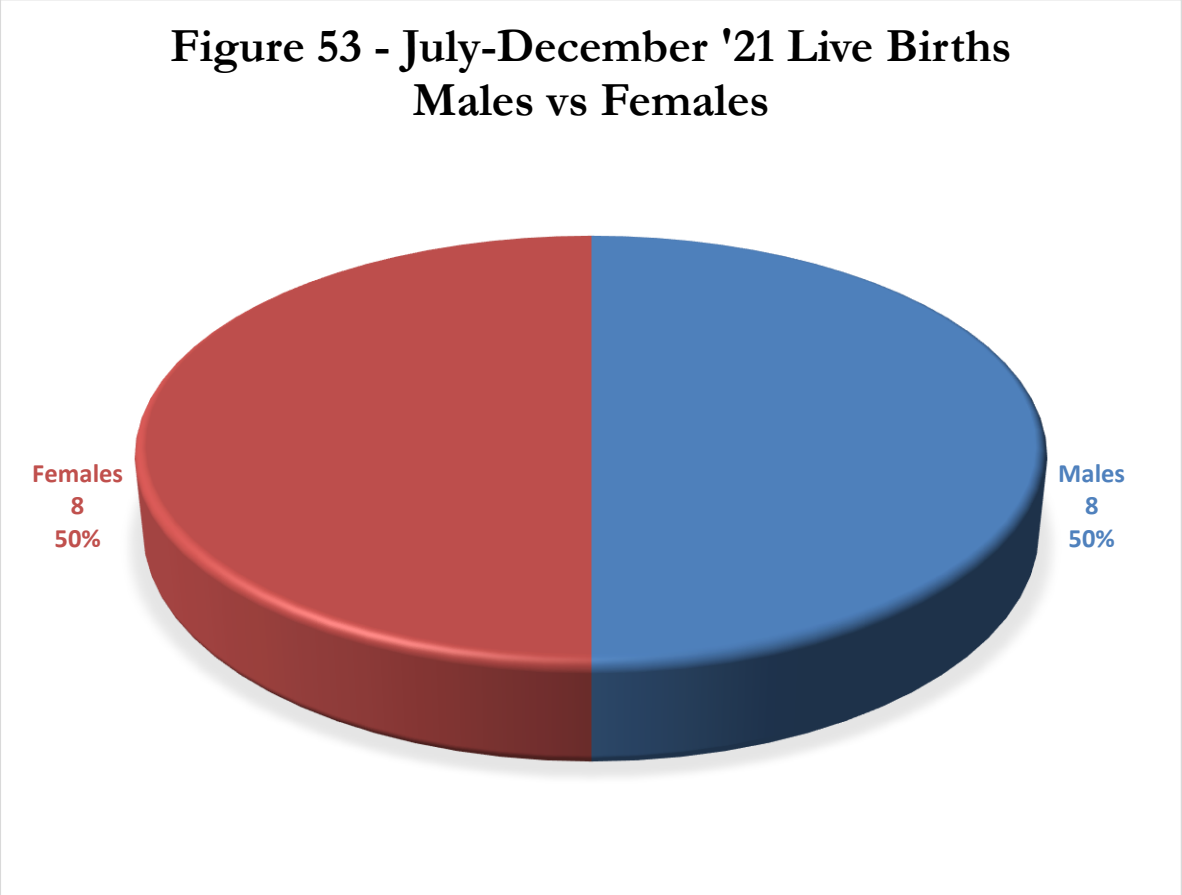
Twelve (12) prospective parents miscarried after achieving a pregnancy from a thawed embryo cycle carried out, eleven (11) at the MDH ART Clinic and one (1) at the HOPE Fertility and IVF Clinic. One of the miscarriages from a thawed embryo cycle resulted from a ROPA procedure. The two (2) other miscarriages were reported from fresh cycles carried out at the private facility. (Figure 52, Table 17).

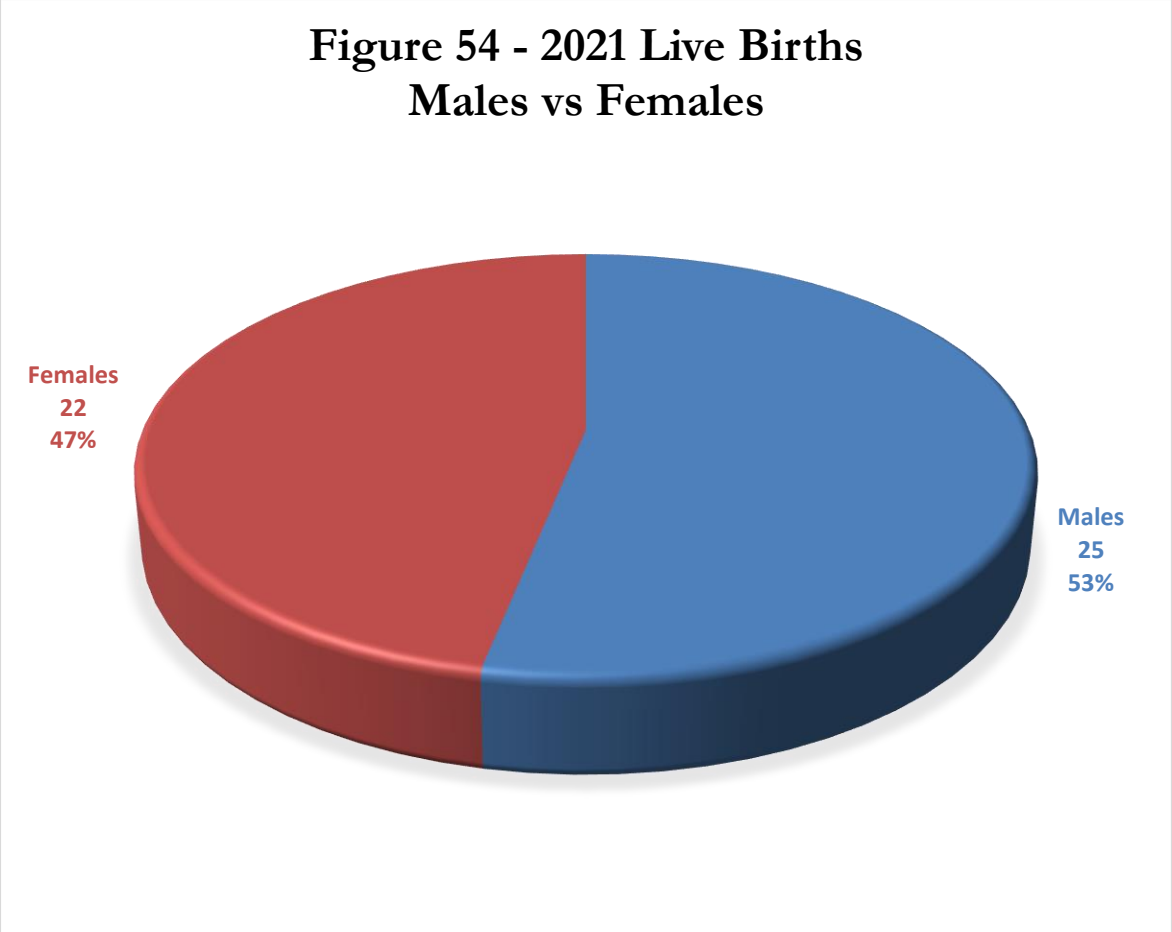


10. BIRTH EVENTS

10.1. Births from July - December 2021 Cycles

In 2022, sixteen (16) babies, eight (8) females and eight (8) males, were born as a result of procedures performed between July and December 2021 (Figure 53). Hence a total of forty-seven (47) babies, twenty-two (22) females and twenty-five (25) males, were born out of the fifty-one (51) pregnancies from procedures carried out throughout 2021. (Figure 54).





Fifteen (15) babies, or 31.91%, were born out of Fresh oocyte cycles. Out of these cycles, eight (8) girls and seven (7) boys were born. The other thirty-two (32) babies or 68.09%, fourteen (14) girls and eighteen (18) boys were born from the thawed embryo cycles (Figure 55).

Forty-two (42) babies or 89.36% of the babies born out of procedures carried out in 2021 were from procedures carried out at MDH, while the remaining five (5) babies or 10.64% were from procedures carried out at the St James Conception Unit. (Figure 56).

Figure 55 - 2021 Live Births
Fresh Oocytes vs Thawed Embryos

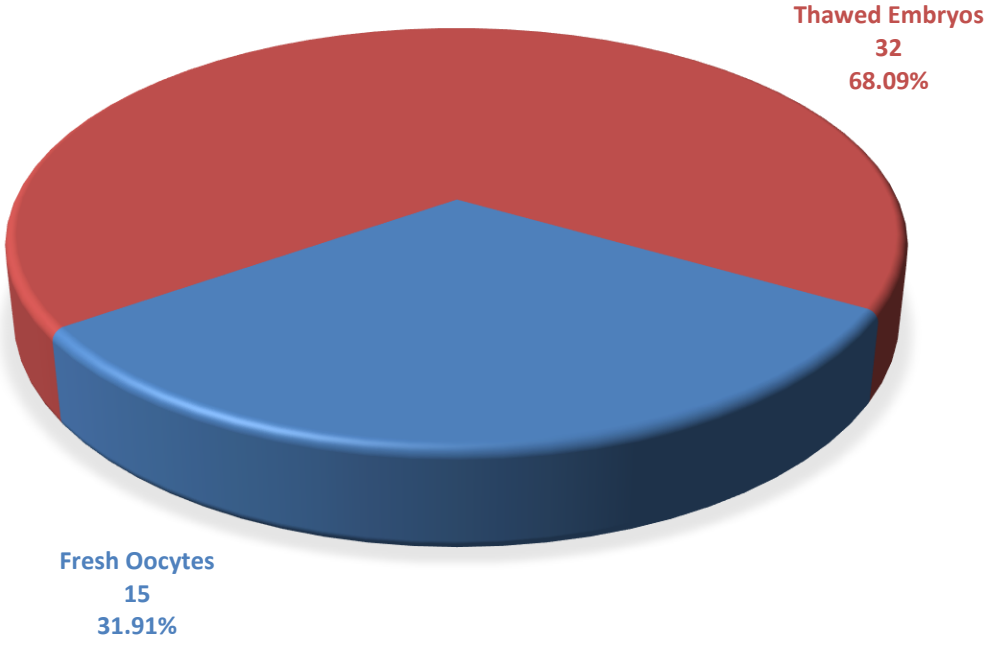
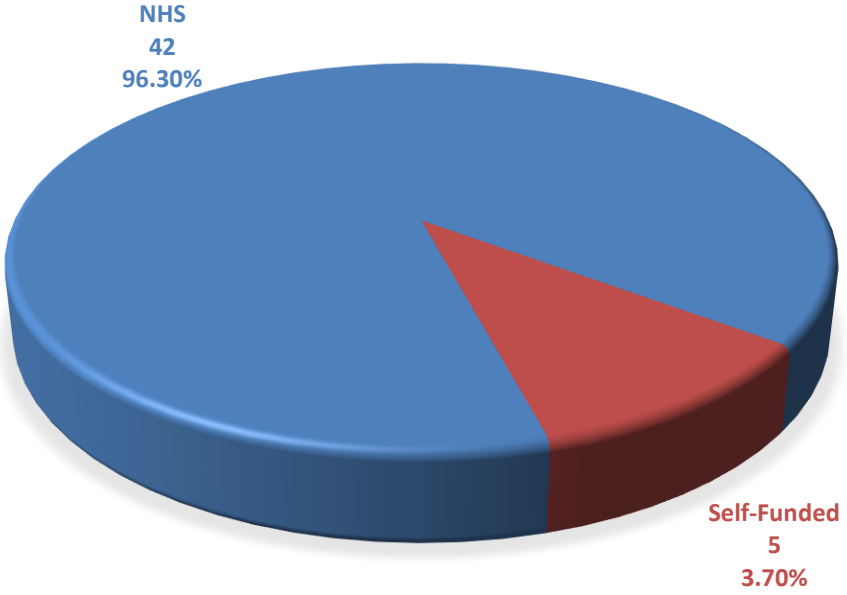


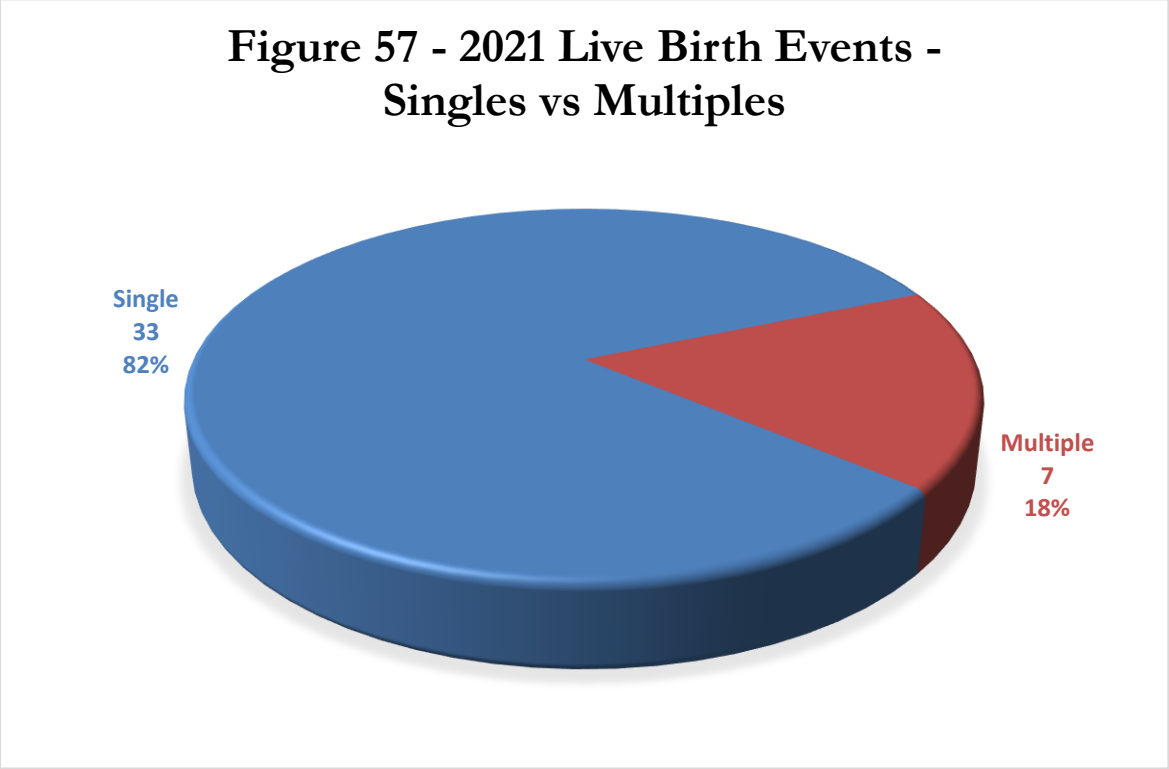
Figure 56 - 2021 Live Births
NHS vs Self-Funded



Out of a total of fifty-one (51) pregnancies achieved in 2021, eleven (11) women miscarried thus resulting in forty (40) live births. No anomalies were recorded in the resulting live births.

Out of the forty (40) Live Birth Events in 2021, there were thirty-three (33) single births and seven (7) multiple births. The multiple births consisted of seven (7) sets of twins.

The percentage of live births from multiple pregnancies in 2021 was of 3.61% of all cycles, a decrease of 0.07% from figures of 2020. (Figure 57).



In summary, out of a total of 194 cycles carried out in 2021 that could lead to a pregnancy, one hundred and forty-three (143) prospective parents did not achieve a pregnancy, eleven (11) miscarried, and forty (40) had a live birth, for a **final Take-Home Baby Rate of 20.62%** (Table 19), **which is a 5.18% increase over figures reported in 2020.**

Table 19 - % Take-Home Baby Rate 2021

Cycle Outcome	Qty	% of pregnancies	% of total cycles
Live Birth	40	78.43%	**20.62%**
Miscarriage	11	21.57%	5.67%
Not Pregnant	143		73.71%
TOTAL CYCLES 2021	194		100.00%

10.2. Birth Events from 2022 Cycles – Fresh Oocytes vs Thawed Embryos

The number of babies born out of procedures carried out between January and June 2022 was of thirty-six (36) babies. Twenty-seven (27) singletons and four (4) multiples being three (3) sets of twins and one (1) set of triplets born from a two-embryo transfer. One other woman gave birth to a still birth.

Out of the thirty-six (36) babies born, eight (8) babies comprising of four (4) singletons and two sets of twins were born from Fresh oocyte cycles carried out at the HOPE Fertility and IVF Clinic. There were no births from fresh cycles at the MDH ART Clinic.

The other twenty-eight (28) babies born, twenty-three (23) singletons, one (1) set of twins and one (1) set of triplets were born from thawed embryo cycles carried out at the MDH ART Clinic. There were no births from thawed embryo cycles at the HOPE Fertility and IVF Clinic, as all prospective parents pregnant are still expecting to give birth.

Babies born were twenty (20) females and sixteen (16) males. Three (3) females and five (5) males were born from fresh oocytes cycles, whilst seventeen (17) females and eleven (11) males were born from thawed embryo cycles. (Figures 58 and 59). No Anomalies were observed in all the infants born.

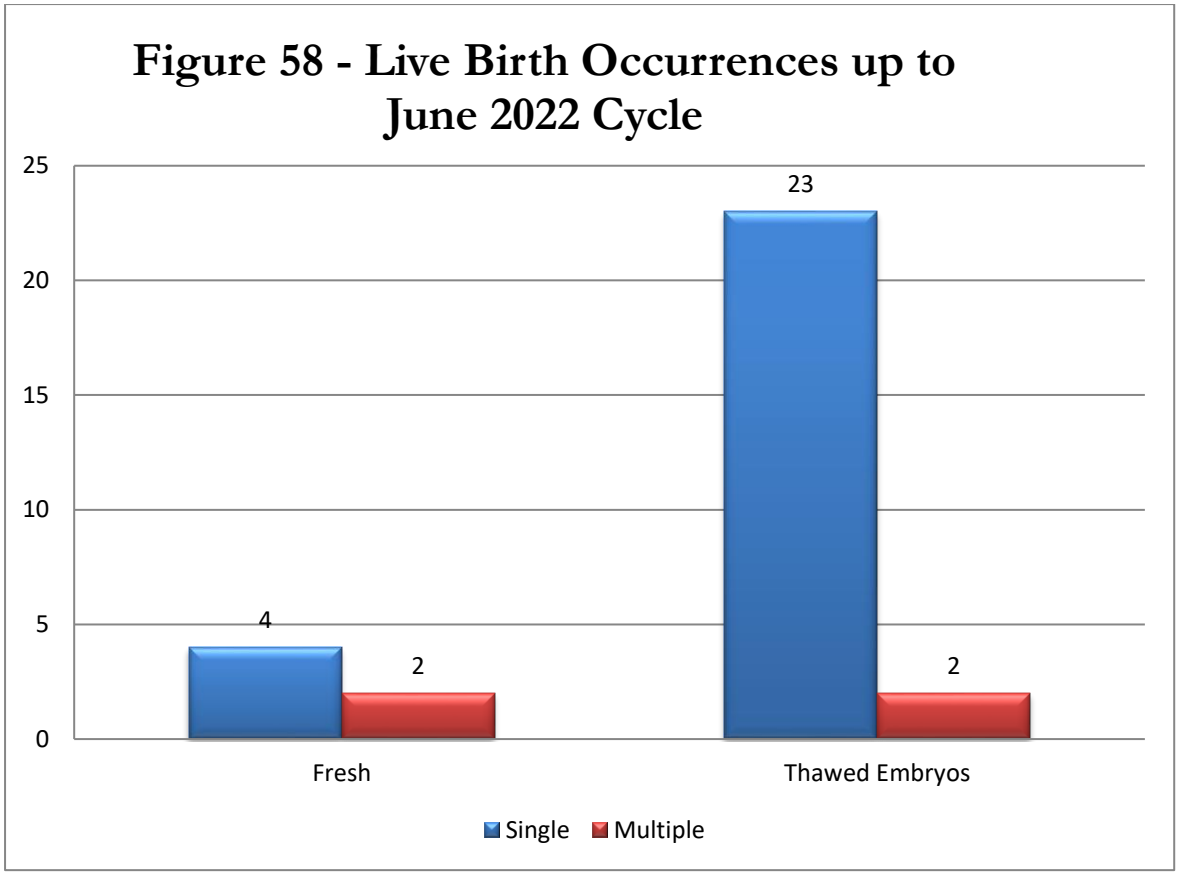


Figure 58 - Live Birth Occurrences up to June 2022 Cycle
25
20
15
10
5
0
4
2
23
2
Fresh
Thawed Embryos
Single
Multiple

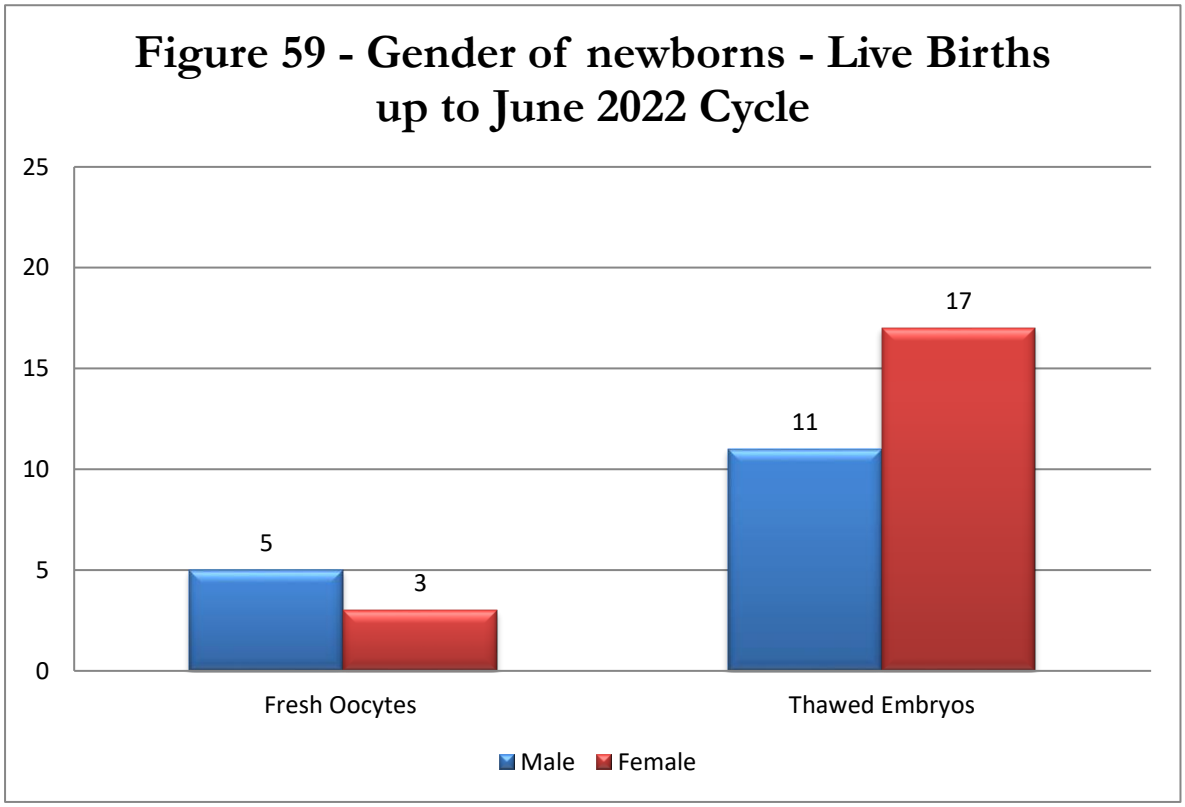
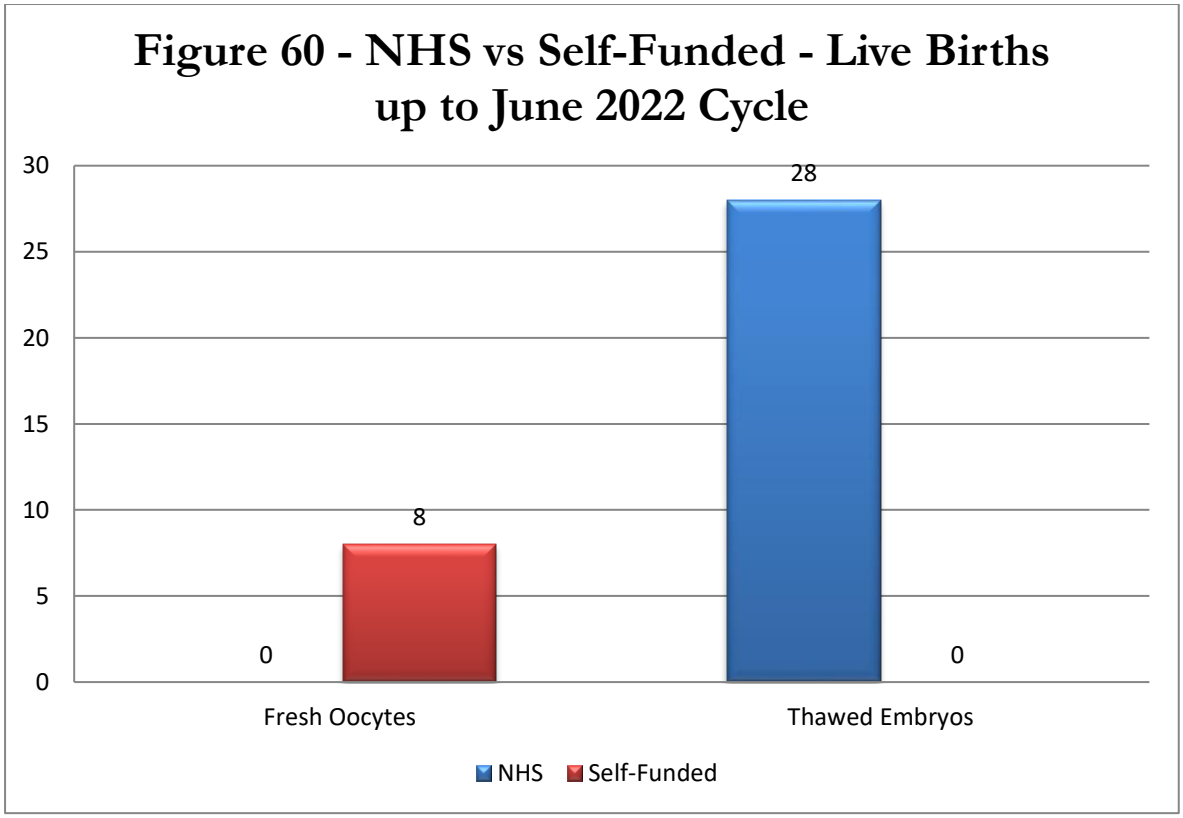


Figure 59 - Gender of newborns - Live Births up to June 2022 Cycle
25
20
15
10
5
0
5
3
11
17
Fresh Oocytes
Thawed Embryos
Male
Female

The thirty-two (32) births events achieved up to June 2022 were reported from procedures done at both facilities. From the fresh cycles one (1) singleton female, three (3) singleton males, one (1) set of twin females and one (1) set of twin males were born from HOPE Fertility and IVF Clinic.

From the thawed embryo cycles, twenty-three (23) singletons, ten (10) males and thirteen (13) females, as well as one (1) set of twins composed of a female and male and a set of triplets composed of three females were born from MDH ART Clinic. (Figure 60).



10.2.1. Expected Birth Events from Fresh Oocytes vs Thawed Embryos

Forty-four (44) birth events are expected from cycles carried out between July and December 2022. These expected birth events are expected to give birth to fifty-one (51) babies as thirty-seven (37) singletons and seven (7) sets of twins are expected. Twenty-three (23) babies are expected from cycles carried out on the NHS whilst another twenty-eight (28) babies are expected from the private facility.

Twenty (20) babies comprising of Nine (9) singletons, five (5) sets of twins as well as one (1) singleton from donor sperm used by a same sex couple are expected from Fresh oocytes cycles, all carried out at HOPE Fertility and IVF Clinic. No expected births from fresh oocytes cycles are expected from the MDH ART Clinic.

The remaining thirty-one (31) babies are expected from twenty-nine (29) birth events from Thawed embryo cycles carried out. Twenty-three (23) singletons are expected from cycles carried out at the MDH ART Clinic, one (1) of these singletons is expected from donor sperm used by a same sex couple undergoing a ROPA procedure. The remaining eight (8) babies comprising of four (4) singletons, one (1) set of twins and another one set of twins from donor sperm used by a same sex couple are expected from thawed embryo cycles carried out at HOPE Fertility and IVF Clinic. (Figure 61 and Figure 62).

The percentage of live and expected births from multiple pregnancies, Ten (10) sets of twins and one (1) set of triplets, in 2022 is of 4.01% of all treatment cycles carried out, an increase of 0.40% from figures reported in 2021.

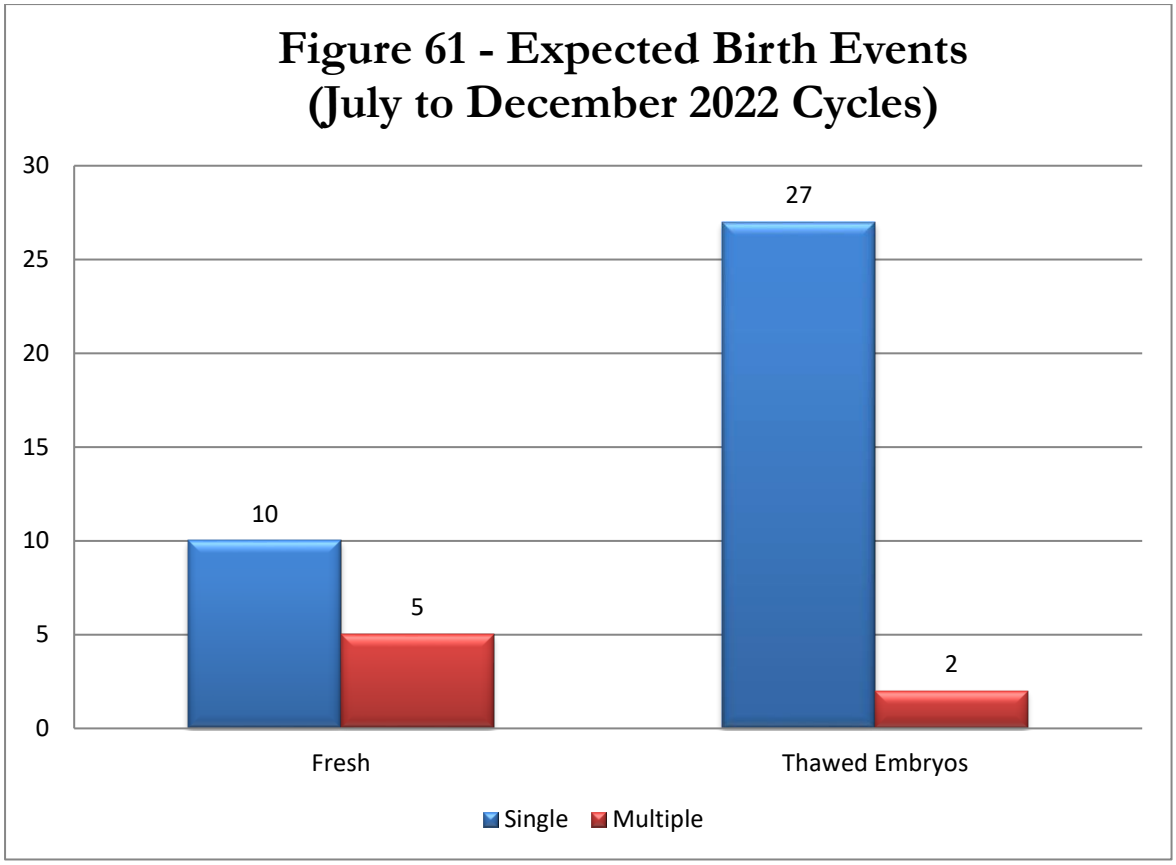


Figure 61 - Expected Birth Events (July to December 2022 Cycles)
30
25
20
15
10
5
0
10
5
27
2
Fresh
Thawed Embryos
Single
Multiple

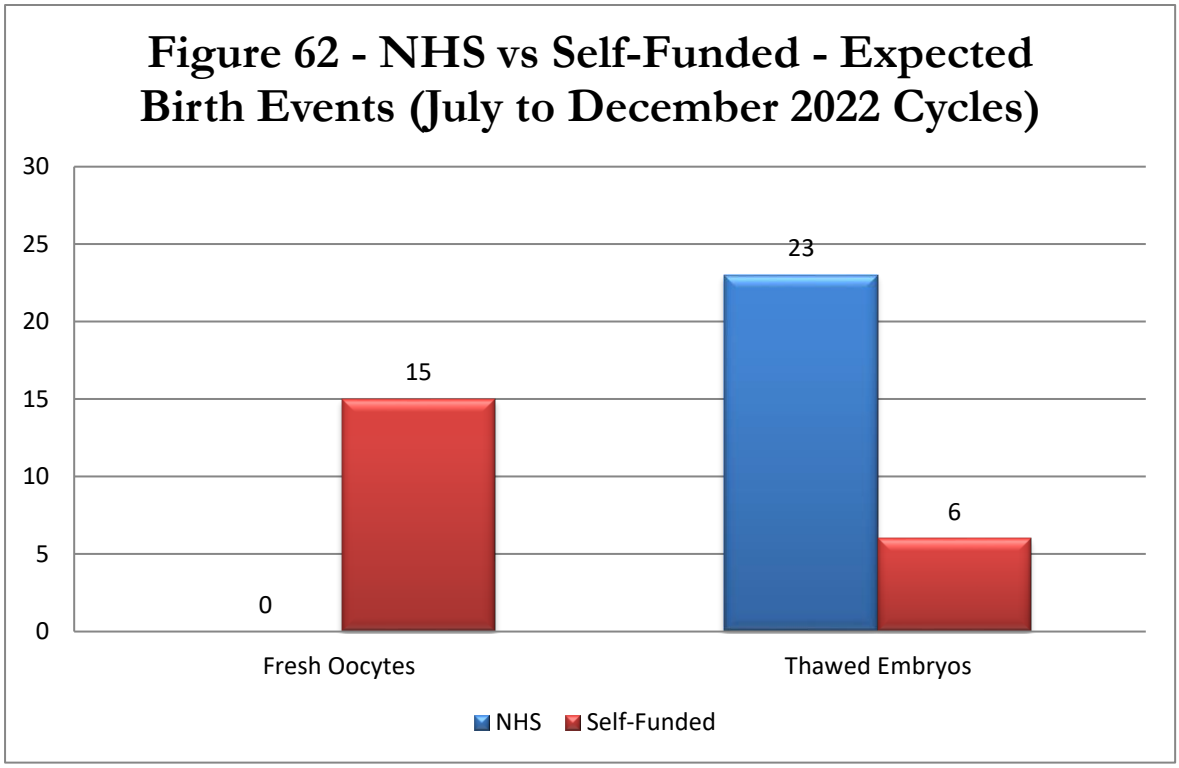


Figure 62 - NHS vs Self-Funded - Expected Birth Events (July to December 2022 Cycles)
30
25
20
15
10
5
0
0
15
23
6
Fresh Oocytes
Thawed Embryos
NHS
Self-Funded

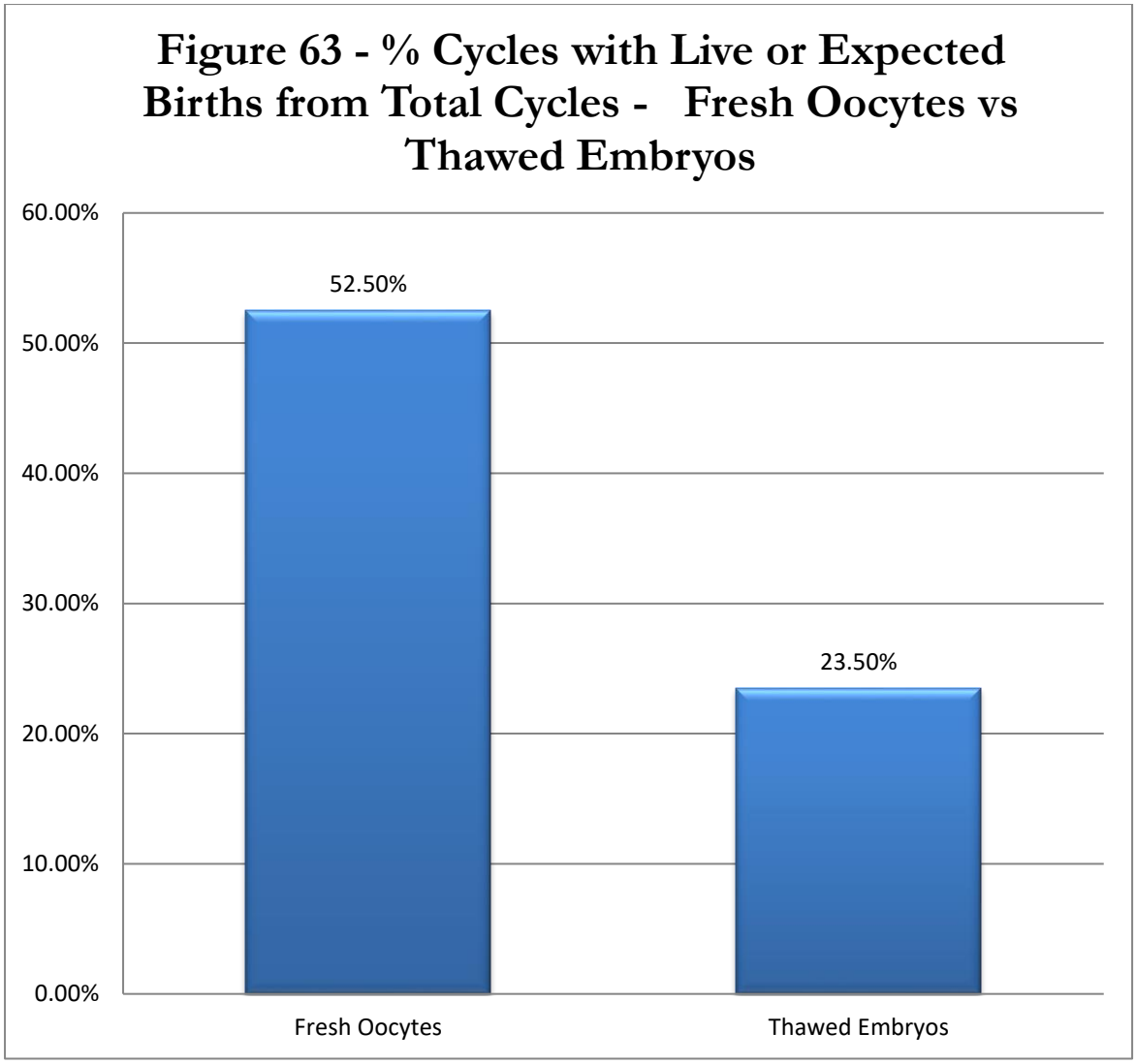
10.3. Maximum Success Rate – Fresh vs Thawed

Out of the seventy-six (76) live and expected births from procedures carried out in 2022, **a total of eighty-seven (87) babies are to be born, this is an increase of forty (40) babies more than the forty-seven (47) babies born from procedures in 2021.**

Twenty-eight (28) babies are from pregnancies achieved through Fresh oocytes cycles and the remaining fifty-nine (59) babies are from Thawed embryos cycles.

From the **forty (40) Fresh Oocytes** cycles carried out, there were **twenty-one (21)** reported birth events (live + expected), for a maximum success rate of **52.50%, which is an impressive increase of 22.95%** over last year's 29.55% maximum success rate from fresh cycles. All these birth events are the result of cycles carried out in the private facility HOPE Fertility and IVF, as the public facility did not have any resulting pregnancies from the fresh oocyte cycles carried out.

Fifty-five (55) birth events (live + expected) were reported from the **two hundred and thirty-four (234) Thawed Embryo** Cycles carried out in 2022, for a maximum success rate of **23.50%**, over last year's figures reported as 19.18%. These birth events were achieved from thawed embryo cycles carried out at both the public and private facilities. (Figure 63).

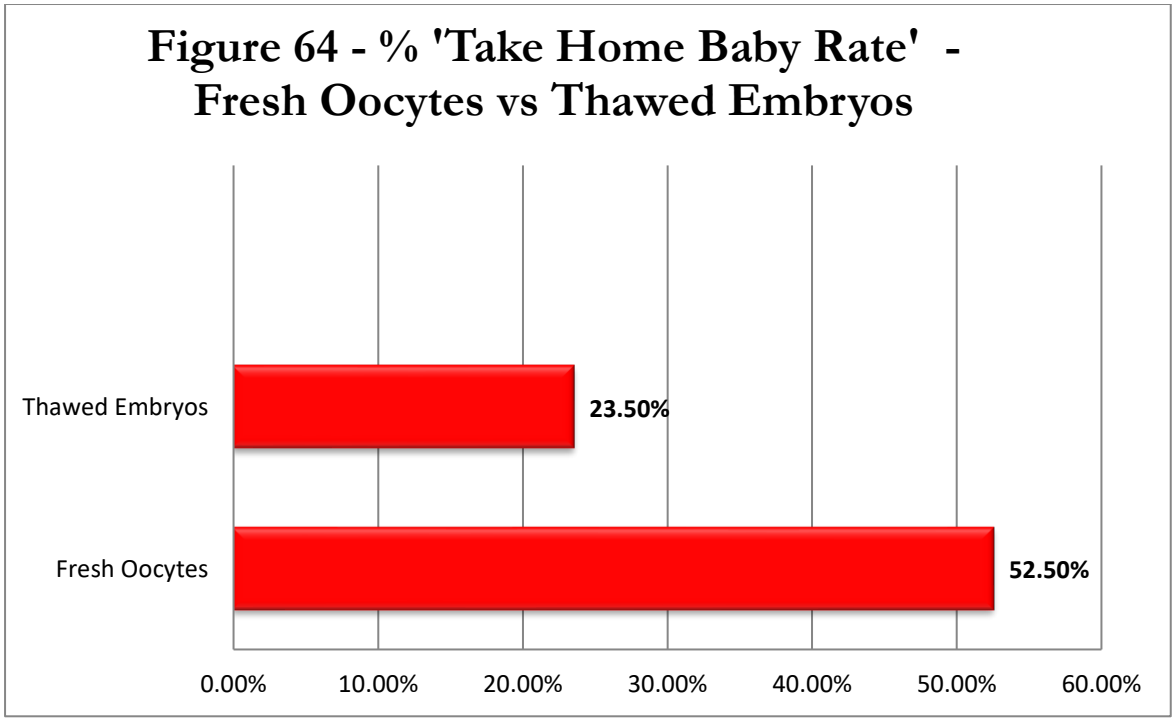


Noteworthy to point out is the fact that during 2022, the Fresh Oocytes cycles reported a success rate of 29.00% higher than the thawed Embryo Cycles. This is the second year in a row that Fresh oocyte cycles were more successful than Thawed Embryo cycles.

10.4. Percentage Maximum Success Rate – 'Take Home Baby' Rate

In conclusion, from the **ninety (90)** prospective parents who achieved a pregnancy in 2022, **thirty-two (32)** prospective parents or 35.56% had a live birth, **forty-four (44)** prospective parents or 48.89% are still expecting, and **fourteen (14)** prospective parents or 15.55% miscarried.

These were achieved mainly from Fresh Oocytes cycles (52.50%), followed by Thawed Embryo cycles (23.50%). (Figure 64).



Out of a total of two hundred and seventy-four (274) cycles carried out, **11.68%** of prospective parents had a live birth, **16.06%** are still expecting, while **5.11%** miscarried.

Consequently, the maximum percentage success rate, or 'Take Home Baby' rate for calendar year 2022 is 27.74%, resulting in a good increase of 7.12% over the 'Take-home Baby' Rate of 2021 and a substantial increase of 12.30% over the 'Take-home Baby' Rate of 2020. (Table 20).

Table 20. % Maximum Success Rate – 'Take Home Baby' Rate 2022

Pregnancy Outcome	Qty	% of pregnancies	% of total cycles	% Max Success - 'Take Home Baby' Rate
Live Birth	32	35.56%	11.68%	27.74%
Expected	44	48.89%	16.06%	
Miscarriage	14	15.55%	5.11%	

11. Conclusion

The number of ART procedures carried out in Malta in 2022 increased by 35% over the previous year, which is mainly attributed to the fact that in 2021 less procedures were carried out at the MDH ART Clinic as the clinic was increasing slowly its activity impacted by the Covid-19 measures in place. The private sector registered a massive increase of 87% over the procedures carried out in the private clinics in the previous year. This increase in the private sector was mainly due to the fact that a new licenced clinic HOPE Fertility and IVF started offering an ongoing service.

ICSI was the preferred procedure of choice in all procedures carried out by the licensed clinics. There were **ninety (90) or 32.85%** reported pregnancies out of the two hundred and seventy-four (274) treatment cycles started, **6.56% Higher** than the pregnancy rate for 2021 and **14.47% Higher** than the pregnancy rate for 2020.

The birth events were achieved mainly from **Fresh Oocytes cycles (52.50%),** followed by **Thawed Embryo cycles (23.50%).** During 2022, the **Fresh Oocytes cycles reported a success rate of 29.00% higher than the thawed Embryo Cycles.** This is the second year in a row that Fresh oocyte cycles were more successful than Thawed Embryo cycles. For the first time, in this annual report we have reported procedure outcome from cycles making use of **third party donor sperm and ROPA procedures**, again here **a very good success was registered of a 40% pregnancy rate.**

The **maximum percentage success rate**, or '**Take Home Baby' rate** which implies a birth event and is the most meaningful measure of treatment success, stands at **27.74%, resulting in a good increase of 7.12% over the 'Take-home Baby' Rate of 2021 and a substantial increase of 12.30% over the 'Take-home**

Baby' Rate of 2020. Considering all the impact on activity by the Covid measures the increase in success is noteworthy and as an Authority we shall strive together with all stakeholders to increase even more the success rate of the 'Take home Baby' rate in the coming years.

The Embryo Protection Authority shall keep providing guidance and support to all the licensed ART clinics, as well as to all IUI registered clinics in Malta so as to ensure that they are operating under the highest standards. Moreover, as the Regulator, the Authority will keep on striving to ensure that all local Clinics offering ART services comply with the obligations and requirements imposed by or under the Embryo Protection Act 2012, and its amendments coming into force in 2018 and 2022, as well as the Authority Protocol that has been given recognition as a subsidiary legislation.

We will continue to strive to see that the many strides we have made in this sector since the inception of the Authority in 2013 will continue to flourish. We also promise that we will continue to be the voice of our patients as we have been in the last ten years, and that we will continue to focus on what we want to achieve in this field and how we will work together with all stakeholders towards achieving it.

Hon Judge Philip Sciberras UOM

Chairperson

Ms Simone Attard

Chief Executive Officer

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