Student Devised Assessment (SDA) Accompanying Piece: Perspectives on Prenatal Testing

Word Count: 1639

For my student devised assessment, I decided to promote thought and discussion surrounding women's views on undergoing prenatal tests. Coming from a life science background, prenatal testing is not something I have learned about before. I believe there is a value in educating myself surrounding this topic and is something that everyone would benefit from being aware of. Most of the general public are likely to encounter prenatal testing or know others who have experienced it but may not be conscious of the debate prenatal testing has created.

With the general public in mind as my audience, I selected art as my medium. One of the reasons for this choice is that it gave me the opportunity to do something outside of my degree stream and usual way of assessment. At secondary school, I enjoyed art, providing me with a form of escapism, but also a way to convey emotion and opinions without the use of words. This assessment finally offers me a way to link both my science background and art together. Initially, my idea was to educate the general public on the actual procedures used in prenatal testing via art or a poster. However, I felt this would require a lot of information, which can often be hard to digest, and would require considerable concentration from the public. The art piece should draw attention to benefits and concerns surrounding prenatal testing and allow the individual to make up their own opinions and interpretations of what to take from it. However, it must be bold to catch the audience's attention which I think diagrams of the procedures would not have achieved.

The Relationship Between Science and Art:

Painting a picture is like the development of a scientific field. It is an evolutionary process that often advances, occasionally regresses, and frequently sees intervals without much progress [1]. Indeed, this is something I experienced while painting. Art has been a medium to show science for thousands of years when an image was one of the only ways to promote learning. Art helped illustrate diagnostic procedures and treatments current to the society at the time or to visualise scientific methods and theories, which would help educate their audiences [2]. For example, drawing anatomy provided a way for others to learn who were not able to attend live dissections, especially since the use of human cadavers for research has been associated with moral issues, and suitably relates to the words of Frank Netter: "Draw what can't be seen, watch what's never been done, and tell thousands about it without saying a word" [3, 4]. In turn, this practice also influenced artists to create more realistic art. Moreover, science has been heavily involved in the formulation of paints and pigments [5].

Genetics and medicine have a close relationship with art, whereby artists suffering from diseases have shown this through their artwork, or individuals with genetic diseases, such as Down's syndrome or dwarfism, have been depicted by portrait artists [2, 6]. With the discovery of DNA and rapid genetic technological advancements, more contemporary artists are incorporating genetics into art, often as cultural icons or symbols [7]. More recently, the development of chromosome painting using visualisation techniques such as fluorescence in situ hybridization (FISH) demonstrates the influence art can have on genetics. Chromosome painting colours the entirety of the genome, allowing structural and numerical chromosome aberrations in human diseases to be screened for and diagnosed with high specificity [1]. Art makes genetics understandable for all and portrays things that one cannot always experience.

Relevant Background Research:

Prenatal screening tests can identify the probability of a foetus having certain chromosomal abnormalities or birth defects due to genetic conditions [8]. They cannot make a definitive diagnosis but if results indicate an increased risk for a genetic disorder, a diagnostic test is offered for confirmation. Diagnostic tests are often more invasive procedures like chorionic villus sampling and amniocentesis, which carry a small miscarriage risk. The samples undergo cytogenetic evaluation, techniques like FISH or karyotyping will confirm with certainty chromosomal abnormalities.

Pregnant Women's Perspectives on Prenatal Testing:

Prenatal tests have created new forms of choice, reproductive control, and reassurance for pregnant women [9, 10]. Finding out the health of a child before birth may ease anxiety, give the expecting couple more time to process any diagnoses and allow them the choice of whether to continue the pregnancy or not [8]. These decisions are often dependent on many external factors, including family, experience, and finances. Prior knowledge of any genetic conditions or defects may help inform expecting women how to prepare and care for a child, improve its quality of life, and get support [11]. It also allows medical personnel to plan for the birth or give treatments prenatally for certain conditions [8, 12, 13]. Although these prenatal tests do provide great benefits and peace of mind for many women, several concerns have been voiced.

The current prenatal testing and selective termination practices across the world aim to correct, ameliorate, or prevent genetic disorders, resulting in negative and damaging devaluation of the disabled community, also termed expressivist objection [14, 15]. Some countries, like Iceland and Denmark, have very high screening uptake and termination rates after Down syndrome diagnosis [16, 17]. Prenatal tests heavily rely upon values, often not considering experiential knowledge of those living with the condition. Many individuals have called for more information about the lived realities of disability to be extended to prospective parents facing reproductive decisions following diagnosis [10, 18]. Furthermore, many women feel overwhelmed and worried when they learn of the risks which possibly accompany the genetic conditions. Several documentaries, like "A World Without Down's Syndrome?" (2016), have spoken out concerning medical advice being overly focused on the complications associated with a disability and encouraging terminations rather than balancing with the positive aspects of life [19, 20].

Despite the emphasis on private, informed decision-making, rational choice, and patient autonomy, it has been questioned how individualised these reproductive decisions are for expecting women [10]. Pregnant women may still be subject to scrutiny from family and friends, which could shape their decisions or create a need to justify any decisions taken [21, 22]. This added pressure and anxiety may outweigh the benefit of knowing any prenatal test results. Historically, women held responsibility for pregnancy outcomes, often blaming themselves if something is wrong with the unborn child [10, 23]. The expectations of motherhood have shifted alongside the development of reproductive genetic technologies. The very accessibility to this genetic knowledge has introduced a maternal responsibility not only to obtain this information but also to terminate those pregnancies assumed by society to be inherently negative and burdensome. In fact, it can be difficult for those who are experiencing financial problems because prenatal tests are expensive, which could limit their options [24]. Therefore, women are more physically, morally, legally, and socially implicated in reproduction than men, indicating that reproductive responsibility is extremely gendered and has expanded to include accountability for the baby's genetic health [25].

With the advancement of visual reproductive genetic technologies, like ultrasound, and embryology research, there is now a range of increasingly precise terms for an unborn child from conception to birth

[26]. However, no parallel terms capture that of a pregnant woman gestating. This asymmetry indicates a growing role of medical and technological facilitation in pregnancies, which has increasingly subjectified the foetus and objectified the pregnant woman. The provision of increasingly intensive prenatal care has shown a greater probability that women are affected by the image they have learned to see on the screen [27]. Works of literature like Pascal Bruckner's The Divine Child have investigated the philosophical and social implications of mother/foetus subject representation. Additionally, prenatal tests and pregnancy decisions are very frequently explored in television and film. For example, a scene from horror film, Devil's Due (2014) shows main character, Samantha McCall, becoming scared and uncomfortable whilst undergoing an amniocentesis procedure, screaming for the doctors to stop [28]. A sub-storyline in the crime TV show Unforgotten Season 4 (2021) explores a couple who learn their unborn child has Down syndrome and their pregnancy decision [29].

Aesthetics of the Art Piece:

Linking with the historical shift in art, I decided to paint realism, with emphasis on certain features (e.g., magnification of the hands holding medical equipment and the foetus/placenta). The foetus is painted at approximately 22 weeks gestation to represent the latest stage when most diagnostic and screening tests can take place [8].

Medical equipment in painting:

- Ultrasound: A prominent technology in obstetric care that has allowed pregnancies earlier in gestation to be evaluated for malformations, foetal wellbeing, number, and gestational age, and has assisted therapeutic or invasive diagnostic procedures [8].
- Stethoscope: This can be used to detect foetal heartbeat between the 18th and 20th week gestation [30].
- Blood sample: Represents blood screens and NIPT.
- Syringe: Represents sample collection method for amniocentesis or blood tests
- Urine Sample: Assesses for bladder/ kidney infections, diabetes, dehydration, and pre-eclampsia by screening for high levels of sugars, proteins, ketones, and bacteria [31].
- Blood Pressure Pump: Identifies high blood pressure linked to pre-eclampsia which can develop in pregnant women post-20 weeks gestation [32].

Time is a pressurising constraint for women in reproductive decision making and has been represented by the watches on most of the medical personnel's wrists. The gloves and lab coat also show the increased medical intervention and advancement in pregnancy, which is often unknowingly bias because the tests are value-driven and do not consider emotion and experience [19]. To show the overwhelming nature of these decisions because of society, I have painted the woman lying down, cradling her belly, with all the hands holding medical equipment coming from above. Ultimately, I have decided to not discuss too much symbolism in the art piece as I think it is important for the audience to decide what it means to them.

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