Chapter 9
Summary and Conclusion

This chapter outlines the major findings in each phase of the research. The key implications are categorised as theoretical and practical implications. The limitations of the research are acknowledged, and suggestions for future research are proposed. The chapter ends by presenting the conclusion of the research.

1.1 Major Findings

1.1.1 Phase 1: Assessment of the Current Understanding of Reproductive Health and Well-Being Among Women at Different Stages of Life

1.1.1.1 Phase 1A: Qualitative Study.

- The understanding and interpretation of the terms 'healthy' and 'sexual and reproductive health' evolve with age and lived experience. A conceptual understanding of reproductive and sexual health is often acquired through experience and personal exchanges, such as conversations with peers
- Women's understanding of their bodies and various reproductive issues is significantly shaped by their lived experiences. These experiences are diverse and unique; while certain events such as menstruation, conception, reproductive health issues, and menopause are common among women, the personal implications and lived experiences surrounding these events differ markedly
- Discourse around menstruation is only a few decades old, and women today are far more aware than in the past; topics such as menopause and other reproductive health issues remain less openly discussed.
- There is strong evidence for the influence of sociodemographic settings that impact getting information regarding reproductive health. Information seeking depended

on an individual's keenness towards well-being, which was affected by the sociodemographic environment.

- School plays a pivotal role in foundational learning and initial exposure towards menstruation. However, the learning mode is more instructional and does not provide conceptual clarity in most scenarios.
- Women depend on male partners for information related to sex and contraceptives.
- As the discussion around reproductive health is still a taboo, it restricts intergenerational knowledge transfer.
- Metaphors are commonly used as a mode to inform adolescents regarding reproductive health while maintaining discretion. Nevertheless, the accuracy of such imparted knowledge imparted is incomplete, and can lead to misconceptions.
- Misconceptions formed at an early age due to lack of clear communication hinder overall understanding for a long time. Women are unable to speculate about their health implications.

1.1.1.2 Phase 1B: Quantitative Study.

- Understanding of reproductive health had higher accurate response rates among women above the age of 61 years. The question about the function of the ovaries had a higher correct response rate among those aged 31–45 years.
- Participants aged 61 years and above had significantly higher scores for the questions about white discharge and the removal of the uterus and ovaries. On questions related to the identification of the symptoms of PCOS, participants aged 46–60 years scored significantly higher than the other age groups.
- Participants aged 61 years or above had higher scores than the other age groups for the questions on estrogen, arthritis, and common problems related to reproductive health and conception, and significantly higher scores for the question regarding common problems with reproductive health and conception.
- Regarding mental health problems and awareness of such problems, participants aged 21–30 years had higher scores, albeit not significantly.
- Of the 696 participants in the sample, only 4.7% said they 'have a thorough understanding of reproductive health and well-being', most belonging to the age group of 21–30 years. However, their scores for their self-evaluation of their understanding was less. This indicated that although participants aged 21–30 years

felt they had a better understanding of the topic, their scores did not validate this. Further, 52.3% of the participants said they 'know nothing about the topic', of whom 57.7% were aged 46–60 years; however, they had higher scores for **the questions leading to understanding.**

- Overall, irrespective of age, most participants started learning about reproductive health and well-being after the age of 12, with an understanding that was initially limited to menstrual hygiene. The understanding of the complexities related to reproductive health was established at a much later point in life.
- The participants' information sources included formal education (including sex-education classes in school and promotional events by agencies dealing with sanitary products), discussions with friends and peers, family, doctors, media (including books, the Internet, and social media), and lived experience.
- There were no significant differences among the age groups regarding the age at learning about reproductive health and information source. However, the mean scores of the age groups suggested that participants aged 36–45 years had a stronger perception of self-knowledge, and those aged 46–60 years had the weakest perception of self-knowledge.

1.1.2 Learnings

There was a gap in the overall understanding and knowledge regarding reproductive health and well-being among women of all age groups. The qualitative data revealed significant evidence of sociodemographic influences that affect information seeking at an early age. The aspects that emerged as factors influencing information seeking included sociocultural practices, perceived notions, the influence of parents and partners, and navigating cultural differences. The quantitative data highlighted that the participants' perception of their knowledge was not related to their actual knowledge; individuals develop conceptual knowledge with age and experience. Women older than 61 years were the most knowledgeable about their reproductive health and well-being; however, their primary source of information was lived experience. Women aged 21–30 and 31–45 years had accessed information through multiple sources, but their knowledge was not reflected in their responses to the questions. The effects of learning through role models and the use of metaphors emerged prominently from the data, which had a substantial impact on learning and recall. This underscores the need to

design interventions for adolescents that help them prepare better for their future health outcomes. These concepts were applied in the design of the toolkit. Awareness and consciousness towards one's well-being were the prominent factors that led to sustainable behaviour change.

1.2 Phase 2: Developing a Gamified Social Communication Model and Toolkit

1.2.1.1 Phase 2A: Building Social Communication Model Using EBCD.

- The results of the qualitative and quantitative data align with the components of the health belief model proposed by Rosenstock, (2004), according to which a lack of health behaviour stems from a lack of perceived susceptibility and perceived severity.
- The findings suggested an evident lack of risk perception, in most cases, with no conscious attempt to inform oneself about reproductive health and well-being.
- The areas of intervention need to include the prediction of risk perception, motivation through nudges to take through the various stages of changes in behaviour
- There is a need to incorporate self-reflective practices to question prevalent norms and notions, leading to the building of a reflexive consciousness.
- Using metaphors in a gamified manner could form a medium to **communicate and speculate about the future of health.**

The toolkit's information provision mechanism needs to be designed in a way that facilitates interventions that can be customised as per age appropriateness, relevance, and attitudes towards information seeking.

1.2.1.2 Phase 2B: Validation by Expert.

- Overall, the experts found the research interesting but expressed some concerns about the proposed framework's applicability in real-life scenarios. Rigorous testing in real-life scenarios was recommended for validating the toolkit's efficacy.
- The experts approved the relevance of the toolkit components in the context of reproductive health and well-being. The purpose of having individuals navigate through the entire toolkit in a democratic manner with choice autonomy was

acknowledged. The experts also consented to the use of archetypes to customise messages as per individual personality types.

- Incorporating the understanding of consciousness with the elements of psychology was accredited as a concept that needs further exploration, and recommendations for further research, testing, and validation were offered.
- There were concerns about using risk or constructive fear as modes of behaviour change, suggestions were made to use more positive and contemporary approaches.
- Ensuring adolescent engagement with the toolkit in the long term require more incentives that more tangible than simply the psychological motivation required to keep adolescent involved. It should also be noted that information on reproductive health may have an emotional and psychologically disruptive impact or become tedious and boring.
- The categorisation of the information must be based on the stages of mental and physiological changes that female adolescents undergo. While the identified age range for the toolkit spans 4 years, the maturity and temperament of a 12-year-old would differ from that of a 15-year-old, not withstanding the substantial increase in individual agency beyond the age of 16. Hence, the age range for providing information should be 10–19 years, along with an age-appropriate information information provision mechanism.
- The involvement and training of toolkit users' parents play an essential role in promoting discussions around reproductive health and well-being. Female adolescents seek information about sensitive topics from people they can trust. However, sociocultural norms restrict discussion on topics related to reproductive health and well-being. Having such discussions is difficult in most parts of the world, forcing adolescents to seek information from external sources, such as their peers or the Internet. There must be mechanisms to build a circle of trust that allows procuring reliable and authentic information, in order that adolescents are not misled and misinformed.
- The toolkit should also build a mechanism to empower women about their rights through information seeking and knowledge building, encouraging the disruption of the power dynamics that can persist in many families.

1.3 Implications of the Research

The study has significant implications for developing social communication interventions for adolescents to make them aware of their reproductive health and well-being. The social communication framework could contribute to designing interventions for social change. The toolkit based on the framework could facilitate creating awareness at a metacognitive level. The implications can be categorised as theoretical and practical implications.

1.3.1 Theoretical Implications

- The proposed framework integrates models of psychology with principles of participatory/reflexive consciousness. This can be used to understand the core dynamics of human behaviour, identifying indicators that lead to self-reliance.
- The framework can be used to build gamified interventions to bring about social change. The proposed model would be able to help promote well-being by not only informing and creating awareness but also devising a self-development mechanism based on informed choices. The framework could be used to build self-directed technology innovations, giving more autonomy of choice.
- The proposed framework can help promote well-being by informing, creating awareness, and devising a self-development mechanism based on informed choices. The framework could be used to build self-directed technological interventions, giving adolescent girls autonomy.

1.3.2 Practical Implications

The beneficiaries who could take advantage of the toolkit would be:

1.3.2.1 Adolescents.

- Discussions on reproductive health and well-being are unsafe or discouraged in several parts of the world. Interventions based on the proposed framework could empower female adolescents to take ownership of their health and well-being.
- The proposed social communication framework would lead an individual from self-awareness to the achievement of self-goals through the information-knowledge-maintenance process. This would be accomplished by speculating about health through risk perception, leading an individual from pre-contemplation to contemplation, where individuals receive a hard nudge with risk perception
- The toolkit can be used as a self-reflection guide that could work at a metacognitive level throughout a woman's lifespan by facilitating discreet access to scientific information.

1.3.2.2 Stakeholder (Schools, Agencies Working in Adolescent Health, and Policymakers).

- The toolkit and framework can be used by schools and organisations who work with adolescents to curate content based on the location of the audience.
- The option of customising messages and interactive elements to generate knowledge could create a constructive and safe learning space for female adolescents from diverse sociodemographic backgrounds.
- The gamified process of providing information would facilitate the exploration of sensitive topics, which could help policymakers to design interventions that empower women.
- The framework derived from the findings will be used to develop a gamified toolkit for adolescent psychoeducation in schools and other education institutions. The toolkit will be available individuals as a self-owned kit for promoting self-reflection and self-reliance.

1.3.2.3 Parents and peer groups

- Discussions around reproductive health and well-being are considered taboo in most Indian families. The toolkit's open-ended nature could enable it function as a tool for conversation building.
- The toolkit can create a discreet and safe space where a female adolescent can learn about her body and self securely. Use of the toolkit could be moderated as long as the female adolescent is under parental supervision; after adulthood, users can take ownership of the toolkit.
- The toolkit could function as a tool for peer-to-peer collaborative learning that encourages and motivates adolescents to take care of themselves.

1.4 Limitations of the Research

- While the study focused on creating an awareness mechanism for adolescents, it was not tested with adolescents. Hence, the validity of the social communication model has to be tested among adolescents from different demographic settings.
- Due to the constraints imposed by COVID-19, the fieldwork for this research could not be conducted, and the sample was limited to netizens (i.e., individuals with Internet access). The toolkit needs further validation among adolescents residing in rural settings in India.
- The applicability of the toolkit could not be confirmed with adolescents and requires thorough testing and validation.

1.5 Recommendations for Future Work

- Future work will include developing a toolkit, evaluating and validating it with experts and adolescents,
- Working in collaboration with NGOs and schools to deploy the toolkit.
- The toolkit concept is based on self-reflection and uses archetypes, interactive board games, conversational cards, and metaphors in a gamified manner. Although the toolkit's components have been identified, further work is needed to flesh out the functionality of each component in detail.

- The flow of information and age appropriateness of content need to be validated by experts in the field of adolescent health. Further, the efficacy of journaling and self-reflection habits must be determined and validated using rigorous testing methods.
- The toolkit is currently in the form of a rapid paper prototype that can be adapted to a digital interface, which would lead to better functionality for some of the features, such as building the metaphor.
- Furthermore, the tool must be validated by conducting long-term user testing in collaboration with NGOs working with adolescents and schools.
- Currently, female adolescents constitute the target population. Future studies could be conducted among male adolescents.