

Implementation of Preconception Health Services in Some Southeast Asian Countries: A Literature Review

Fitrianty Sutadi Lanyumba^{1,5*}, Muhammad Syafar², Darmawansyah³, Apik Indarty Moedjiono⁴, Anang S Otoluwa^{5,6}

Fitrianty Sutadi Lanyumba^{1,5*},
Muhammad Syafar², Darmawan-
syah³, Apik Indarty Moedjiono⁴,
Anang S Otoluwa^{5,6}

¹Doctoral Program, Faculty of Public Health,
Hasanuddin University, Makassar, INDONESIA.

²Department of Health Promotion, Faculty
of Public Health, Hasanuddin University,
Makassar, INDONESIA.

³Department of Administration and Health
Policy, Faculty of Public Health, Hasanuddin
University, Makassar, INDONESIA.

⁴Department of Biostatistics and
Demographics, Faculty of Public Health,
Hasanuddin University, Makassar, INDONESIA.

⁵Faculty of Public Health, Tompotika University
Luwuk Banggai, INDONESIA.

⁶Health Department, Banggai Regency, Central
Sulawesi, INDONESIA.

Correspondence

Fitrianty Sutadi Lanyumba

Doctoral Program, Faculty of Public Health,
Hasanuddin University, Makassar & Faculty
of Public Health, Tompotika University
Luwuk Banggai, INDONESIA.

E-mail: fitri.sutadi@gmail.com

History

- Submission Date: 19-03-2024;
- Review completed: 28-04-2024;
- Accepted Date: 10-05-2024.

DOI : 10.5530/pj.2024.16.113

Article Available online

<http://www.phcogj.com/v16/i3>

Copyright

© 2024 Phcogj.Com. This is an open-
access article distributed under the terms
of the Creative Commons Attribution 4.0
International license.



ABSTRACT

Objective: This literature discusses various forms of implementation of preconception health services in Indonesia, Malaysia, Singapore, Thailand, Vietnam, and the Philippines. **Methods:** This literature uses a narrative review with a time limit of 10 years (2011–2021) and sources from online database journals that provide free journal articles in PDF format. These include Q1–Q4 open access journals, Google Scholar, PubMed, Elsevier, and other sources, such as data from the Ministry of Health of the Republic of Indonesia. Of the 52 studies identified in the search phase, 17 were eligible for inclusion in this review. The keywords used in the literature search are preconception, health services, and Southeast Asia. The analysis carried out in this study is to group and combine the same types of preconception services from each country. **Results:** There is literature showing the implementation of preconception health services in some countries in Southeast Asia. These services include increasing preconception knowledge (in couples of childbearing age and adolescents), providing preconception care in the form of micronutrients, iron administration, use of contraceptives, counseling, screening for infectious diseases, increasing the participation of health workers in the village, and developing web-based preconception electronic modules and platforms. **Conclusions:** Providing micronutrients to women of childbearing age is a preconception service that is carried out in almost every country in Southeast Asia; some countries have developed preconception health service information systems, and other countries have not. It is necessary to evaluate the performance of existing preconception health services.

Keywords: Preconception, Health Services, Southeast Asia.

INTRODUCTION

One of the indicators in measuring the health status of a country is looking at the maternal mortality rate (MMR) and infant mortality rate (IMR).¹ Two mothers die every hour from 5 million pregnancies per year, and this is due to complications during pregnancy, childbirth, and the puerperium.² Meanwhile, the Millenium Development Goals (MDGs) target proclaimed by the United Nations for the maternal mortality rate is 102 per 100,000 live births in 2015.³ One of the complications of being pregnant happens wherein 12–26% of identified pregnancies are frequent.⁴ So, the condition of the fetus during pregnancy is influenced by the woman's health condition during the premarital period.⁵

The health of the mother and her baby during pregnancy, childbirth and the puerperium depends on the woman's health status during the preconception period.⁶ In addition, the health of the baby born additionally relies upon the mother's nutritional status for the duration of the preconception period, during which many pregnant women have dietary issues, including chronic energy deficiency (KEK) and nutritional anemia.⁷ International statistics suggest about 32 million pregnant women and 273 million toddlers are afflicted by anemia. In Southeast Asia, it is recognized that 1 in 4 women are afflicted by anemia for the duration of pregnancy. This example has been associated with an expanded risk of maternal demise at some point during pregnancy and the puerperium.⁸

In addition, stunting is also viewed as one of the risks of increasing child morbidity and mortality because it affects the increased risk of chronic disease in later life.⁹ Presently, stunting is one of the nutritional issues experienced by children under the age of five in the world. Around 150.8 million (22.2%) toddlers worldwide were affected by stunting in 2017.¹⁰ For Indonesia itself, the proportion of stunting in 2019 was 27.67%. The highest areas were in East Nusa Tenggara, West Sulawesi, and West Nusa Tenggara. This condition is still far from the national mid-long-term development (RPJMN) target to lower the incidence of stunting to 14% in 2024.^{3,11,12} Some of the health problems in women are caused by the fact that most women in the world take antenatal care when they are pregnant, so it is considered too late for preventing some of the risks of pregnancy.^{5,13}

Various forms of preconception care and service efforts have been carried out by different countries worldwide. This is because of the focus on continually improving maternal, child, and adolescent health, which is in line with the Sustainable Development Goals (SDGs) targets.^{13,14} Several health policies have also been produced by many countries related to preconception care. One of these is Hong Kong, which provides pre-pregnancy services such as risk assessment, educational videos on pregnancy preparation, physical examinations, and laboratory examinations.¹⁴ By doing preconception care in adolescence and the period before pregnancy, it will be easy to identify things related to health, social problems, and bad living habits.¹ The literature discusses various forms of implementation of

Cite this article: Lanyumba FS, Syafar M, Darmawansyah, Moedjiono, Otoluwa AS. Implementation of Preconception Health Services in Some Southeast Asian Countries: A Literature Review. *Pharmacogn J.* 2024;16(3): 677-681.

preconception health services in Indonesia, Malaysia, Singapore, Thailand, Vietnam, and the Philippines.

METHOD

This study is a literature review. We looked for studies from electronic databases on Google Scholar, PubMed, and Elsevier, along with other sources, such as data from the Ministry of Health of the Republic of Indonesia. The inclusion criteria in this study were selected based on the determined theme, namely, preconception. The article search strategy used keywords consisting of two domains: "Preconception" (Preconception OR Preconception Health Services OR Preconception Care) and "Southeast Asia" (Southeast Asia OR Southeast Asian countries). The screening was based on a time limit where the selection of research reviews was the last ten years (2011–2021). This literature review used all types of research designs (qualitative, cross-sectional, experimental, and cohort studies, among others). In the first stage, the database search, 52 studies were obtained. Review articles that were not in accordance with the study's objectives and did not meet the research protocol were not included. In the final search, 17 studies were included (Figure 1).

At the data extraction stage, the researcher looked at all 17 selected articles, wrote down the articles' important results, and then proceeded to the data synthesis stage. The data synthesis was carried out narratively, namely, describing, grouping, and combining research results based on the type of preconception health services from each Southeast Asian country. The gist taken from each research article was the study's title, name of the researcher, year of publication, place of research, sample size, research methods, and research results with significant values.

RESULTS

This literature study takes research from several countries in Southeast Asia, namely, Indonesia, Malaysia, Singapore, Thailand, Vietnam, and the Philippines. The samples from several studies consisted of women of childbearing age (preconception women), pregnant women, postpartum women, men of childbearing age, adolescents, and health workers. Three studies described efforts to increase preconception knowledge (in couples of childbearing age and adolescents) through preconception education. Eight studies described efforts to provide

preconception care in the form of micronutrients, iron administration, use of contraceptives, counseling, disease screening for infectious diseases, and increased participation of village health workers. And six studies described efforts to develop web-based preconception electronic modules and platforms (Table 1).

DISCUSSION

Increased knowledge of preconception women in terms of preconception nutrition, physical health, and lifestyle is strongly influenced by the provision of interventions in the form of preconception education.⁶ In addition, preconception education is also positively related to men's behavior in undergoing the preconception period. There are several forms of behavior in question, namely, carrying out activities such as regular exercise and physical activity, regulating diet, avoiding tobacco consumption, and regulating sleep patterns.¹⁵ It is also known that increasing adolescent knowledge about preconception care reduces the risk during pregnancy, childbirth, and the puerperium. This can contribute greatly to the reduction of the MMR and IMR.¹ In line with that, there has been an increase in women's knowledge (high or low education) by providing information in a timely manner during preconception services on K1 antenatal visits in Pagimana Banggai Regency (Indonesia).²³

In addition to health education, one solution in dealing with health problems in the area, especially the problem of stunting, is carrying out collaborative preconception health services between health workers in East Nusa Tenggara (Indonesia) at the Puskesmas (community health centre in Indonesia) and in the community and related cross-sectors.⁷ In line with that, the Philippine government should seek to involve public and private cross-sectors and use an interdisciplinary approach to implement preconception health programs for women, men, and adolescents. This is intended to reduce the gaps in preconception services in rural and urban areas.¹⁴ This is also seen with preconception care actions carried out by Puskesmas in Jakarta (Indonesia) based on the regulations of the Ministry of Health of the Republic of Indonesia Number 97 of 2014 concerning Health Services for the Pre-Pregnancy, Pregnancy, Childbirth, and Postnatal Periods, Implementation of Contraceptive Services, and Sexual Health Services.⁵ The purpose of preconception care is to focus on preventing infection or bad habits, thus avoiding complications during pregnancy and improving reproductive health.²⁴

Changing the lifestyle of obese women is one of the programs in preconception services in Singapore because it can improve metabolic health.¹⁶ It is the same in Thailand, where the government's commitment to preventing and controlling obese children occurs in the preconception period.¹⁸ In Vietnam, preconception micronutrient administration is considered an intervention that greatly influences the size of the baby at birth and the level of intelligence in children. The results show that the linear growth of children is related to one of the indicators of preconception nutritional status, namely, maternal height, where the current maternal height reflects the mother's genetic picture, nutritional fulfillment, and the environment experienced in the mother's childhood.^{9,17} Adherence to taking micronutrient supplements is often associated with the success of preconception care programs. Several factors, such as a low socioeconomic status, the presence of ethnic minorities, and work as farmers, cause low supplementation compliance by preconception women in Vietnam, so the role of health workers is to distribute micronutrient supplements.²²

Several countries in Southeast Asia are currently using technology and digitalization to make intervention programs in preconception services. In Jakarta (Indonesia) and Malaysia, a web-based E-Health module/platform has been developed using communication technology (telephone and internet) that provides information related

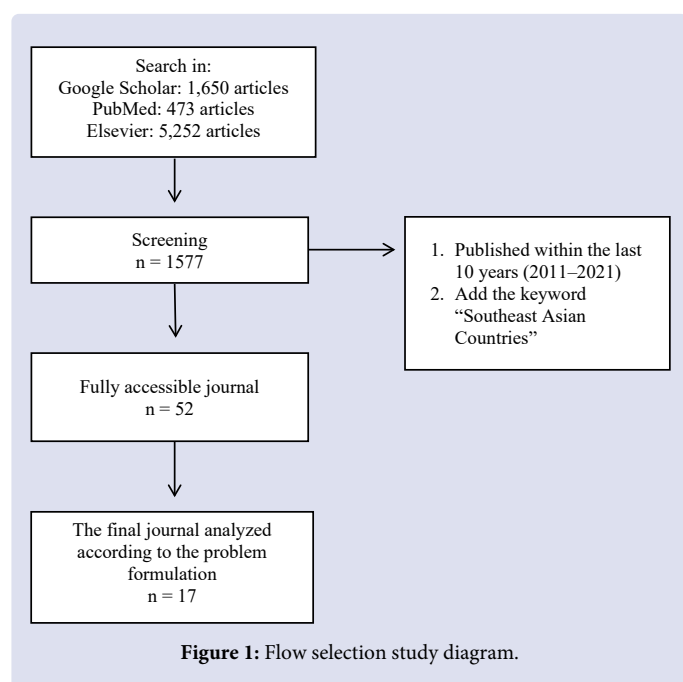


Figure 1: Flow selection study diagram.

Table 1. Studies included in the review.

No.	Author (Year)	Sample	Finding
1	Ika Fauziah Priani, et al (2019)	92 WUS in West Java, Indonesia	The outcomes showed a significant change ($p < 0.001$) inside the degree of knowledge of the intervention group earlier than and after being given preconception schooling ⁶ .
2	Neni Fidya Santi, et al (2019)	11 men who live in Yogyakarta (Indonesia).	A qualitative study shows that the role of nurses/health workers in primary health services is necessary for providing counseling related to preconception health so that there is an increase in knowledge of couples of childbearing age ¹⁵ .
3	Adriana Sainafat, et al (2020)	Studying research result published during 2009 - 2019	Preconception care of teenagers has a very good impact on the preconception period and may lessen maternal mortality and neonatal mortality ¹ .
4	Jeffrey Jap, et al (2019)	Studying research result published during 2009 - 2019	The results showed that to prevent anemia in pregnant women, which resulted in stunting, collaborative interventions related to preconception nutrition in East Nusa Tenggara ⁷ .
5	Wiwit Kurniawati, et al (2021)	9 informants (health practitioners at Puskesmas in Jakarta) were obtained that matched the criteria, consisting of: doctors, nurses, midwives, health analysts, and psychologists	The forms of preconception service programs provided by health workers at the Puskesmas in Jakarta (Indonesia) are health education (providing counseling on reproduction, HIV, birth control, and a few religious views on marriage), screening (laboratory examinations), vaccinations, pill administration. Iron (Fe tablets), and counseling ⁵ .
6	Chee Wai Ku, et al (2021)	15 women in Singapore were obese (preconception women = 5, pregnant women = 5, and postpartum women = 5).	The study results provide an overview of the ideal form of lifestyle change intervention, namely: 1) taking an educational approach, 2) using a health mobile platform, 3) providing motivation for changes in lifestyle habits ¹⁶ .
7	Melissa F. Young, et al (2018)	1409 women in Vietnam.	Pathway analysis results showed that preconception micronutrient administration significantly and positively ($p < 0.001$) had a direct or indirect effect on fetal growth, attainment of size at birth and child height at two years ⁹ .
8	Phuong H Nguyen, et al (2021)	1599 children born to women in Vietnam.	The final sample with data on children aged 6-7 years ($n = 1321$), the comparison results showed that children in the Micronutrient (MM) group had higher FSIQ ($\beta = 1.7$; 95% CI: 0.1, 3.3), WMI ($\beta = 1.7$; 95% CI: 0.2, 3.2), and PSI ($\beta = 2.5$; 95% CI: 0.9, 4.1) compared to children in the Folic Acid (AF) intervention group. Other results showed no significant difference for VCI and PRI in the treatment group ¹⁷ .
9	Carmencita D. Padilla, et al (2020)	4,357 women of childbearing age in Philippines	The results show that there is a prominent gap in terms of preconception health care, especially regarding micronutrient intake, immunization status, Family planning and infectious disease screening programs in urban and rural communities ¹⁴ .
10	Sirinya Phulkerd, et al (2021)	This study conducted in Thailand uses secondary starting from June 2019 to March 2020.	The study results indicate that interventions carried out during the preconception period can affect obesity in children in the future. The forms of intervention are providing steering and help for correct nutrition, promoting proper nutrition, wholesome diet and physical activity ¹⁸ .
11	Nurjasmii, et al (2020)	300 couples of childbearing age who are planning a pregnancy in DKI Jakarta and West Java Province.	The results of this study found that using NURANI module in the preparation of the prospective bride and groom has a significant effect on improving the quality of healthy pregnancy planning by couples of childbearing age ($p < 0,000$) ² .
12	Shu-E Soh, et al (2019)	Data retrieval from 2009 on 1247 Chinese, Malays, and Indians in Singapore.	The Growing Up in Singapore Towards Healthy Outcomes (GUSTO) is a study that produces interventions, one of which is on preconception and antenatal nutrition for developing better nutrition recommendations for expectant parents, pregnant women, neonatal and children ¹⁹ .
13	Xin Hui Choo, et al (2021)	Which recruited Asian women aged 18-45 years trying to conceive.	The self-assessment tool developed showed results that women with a score of 3 were defined as low risk (<10% miscarriage); scores 4-6 as intermediate risk level (10% - <40% miscarriage); score seven as high-risk level ($\geq 40\%$ miscarriage) ⁴ .
14	Jutta K. H. Skau, et al (2016)	Malaysian women in the age group of 20 to 39 years.	This research develops an E-health platform which consists of two elements to assess behavioral changes in preventing diabetes in preconception ²⁰ .
15	Shane A. Norris, et al (2016)	The research targets are women of childbearing age who are at risk of having pregnancy complications in the city of Seremban, Malaysia.	The intervention carried out is to improve women's health before pregnancy by doing a combination, namely forming a community health promoters (CHPs) and an electronic health system (web-based platform) called "The Jom Mama" ²¹ .
16	Mary-Elizabeth Reeve, et al (2013)	6,530 women in three country; China, Lebanon, and the Philippines.	This study aimed to increase and check a preconception checklist, administered over six months to selected goal groups in every country. Combined data identify general preconception health requirements in all countries, along with the provision of present-day contraceptives and ok immunization coverage; HIV and STI screening; remedy for anemia; and counseling for keeping of healthy weight ¹³ .
17	Ines Gonzalez-Casanova, et al (2017)	5011 women of childbearing age in Vietnam.	The results showed that the participation of village health workers indirectly distributing micronutrient supplements was positively related to adherence to consumption of micronutrient supplements both before conception and during pregnancy in women in Vietnam ²² .

to preparing and planning for a healthy pregnancy and has a tool to assess the lifestyle of couples of childbearing age before planning for conception.^{2,20,21} These results are in line with research in Australia, which states that some women need clear information regarding preconception services. The dissemination of simple, evidence-based information and easy access will affect women's interest in preconception services.²⁵ Meanwhile, in Singapore and the Philippines, a self-assessment tool (checklist) has been developed to assess the risk of pregnancy that may occur in preconception women. One of the risks of pregnancy that often occurs is a spontaneous miscarriage, where several risk factors are caused by metabolic diseases, anemia, HIV, and other infectious diseases that exist in women during preconception. A government strategy is needed to improve preconception health in each country.^{4,13,19}

CONCLUSION

Various preconception service interventions carried out in several countries in Southeast Asia, such as preconception education, preconception care, and the development of web-based E-health modules and self-assessment checklists, are part of efforts to reduce MMR, IMR, and stunting in every country. Providing micronutrients to women of childbearing age is a preconception service that is carried out in almost every country in Southeast Asia. Some countries have developed information systems for preconception health services. As a follow-up effort to the results of this literature study, it is advisable to research to evaluate the performance of existing preconception health services.

FUNDING

This work is supported by Faculty of Public Health Tompotika Luwuk Banggai University

ACKNOWLEDGMENT

The author would like to thank the Dean of Public Health Faculty of Hasanuddin University, and the Dean of Public Health Faculty of Tompotika Luwuk Banggai University for helping us during collecting the literature.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

- Sainafat Adriana, Asmawati, Ikhlasiah M, Mat SB, Hassan HC. Preconception care in adolescents. *Enferm Clin [Internet]*. 2020;30(2019):73–6. Available from: <https://doi.org/10.1016/j.enfcli.2019.11.024>
- Nurjasmi, Oktalia J, Purwaningsih D. Innovation of Conscience Module in Preconception Class to Support Prospective Quality Assurance in Health Pregnancy Planning. 2020;(10579):10579–83.
- Kementrian Kesehatan RI. Indikator Program Kesehatan Masyarakat dalam RPJMN dan Renstra Kementrian Kesehatan 2020-2024. 2020.
- Choo Xin Hui, Ku CW, Cheung YB, Godfrey KM, Chong YS, Shek LPC, et al. Risk score to stratify miscarriage risk levels in preconception women. *Sci Rep [Internet]*. 2021;11(1):1–11. Available from: <https://doi.org/10.1038/s41598-021-91567-8>
- Kurniawati Wiwit, Afyanti Y, Prasetyo S, Achadi EL, Kumboyono K. The perspective of healthcare practitioners on preconception care at primary healthcare in Jakarta: A qualitative study. *Int J Africa Nurs Sci [Internet]*. 2021;15:100351. Available from: <https://doi.org/10.1016/j.ijans.2021.100351>
- Priani Ika F, Afyanti Y, Kurniawati W. Preparing pregnancy through Preconception Education Training. *Enferm Clin [Internet]*. 2019;29(Insc 2018):304–9. Available from: <https://doi.org/10.1016/j.enfcli.2019.04.140>
- Jap Jeffrey. Importance of Collaborative Intervention of Preconception Nutrition in Suppressing the Stunting Case in East Nusa Tenggara, Indonesia. *Indian J Public Heal Res Dev*. 2019;8(4).
- Nguyen Phoung H, Young M, Gonzalez-Casanova I, Pham HQ, Nguyen H, Truong T V., et al. Impact of preconception micronutrient supplementation on anemia and iron status during pregnancy and postpartum: A randomized controlled trial in Rural Vietnam. *PLoS One*. 2016;11(12):1–16.
- Young Melisa F, Nguyen PH, Gonzalez Casanova I, Addo OY, Tran LM, Nguyen S, et al. Role of preconception nutrition in offspring growth and risk of stunting across the first 1000 days in Vietnam. *PLoS One [Internet]*. 2018;71(Supplement 2):538. Available from: <http://cochranelibrary-wiley.com/o/cochrane/clcentral/articles/789/CN-01428789/frame.html%0Ahttp://www.ncbi.nlm.nih.gov/pubmed/30161206>
- Kemenkes RI. Situasi Balita Pendek (Stunting) di Indonesia. Kementerian Kesehatan RI. 2018;301(5):1163–78.
- Kemenkes RI. Profil Kesehatan Indonesia. Kementerian Kesehatan RI. 2019. 28–28 p.
- Kesehatan BP dan P. RISKESDAS 2018.pdf. Kementrian Kesehatan RI; 2018.
- Reeve Mary E, Charafeddine L, Zhong N, Padilla CD, Yunis K, El Rafei R, et al. Preconception health assessment in china, lebanon and the philippines: Applicability to other countries. *Matern Child Health J*. 2013;18(5):1066–74.
- Padilla Carmencita D, Lynn Sur AD, Villarante KD, Crisostomo HD, Lescano AG, Padilla PJD, et al. Identifying challenges to quality in preconception health care among women of reproductive age in Lipa City, Batangas. *Acta Med Philipp*. 2020;54(4):373–86.
- Santi Neni F, Afyanti Y, Kurniawati W. Men's preconception health behavior: A qualitative study. *Enferm Clin [Internet]*. 2019;29:505–9. Available from: <https://doi.org/10.1016/j.enfcli.2019.04.076>
- Ku Che Wai, Ong LS, Erwin C, Yap F, Loy SL. Development of a Lifestyle Intervention Program for Overweight or Obese Preconception , Pregnant and Postnatal Women : a Qualitative Study. *Res Sq*. 2021;1–18.
- Nguyen Phuong H, Young MF, Tran LM, Khuong LQ, Duong TH, Nguyen HC, et al. Preconception micronutrient supplementation positively affects child intellectual functioning at 6 y of age: A randomized controlled trial in Vietnam. *Am J Clin Nutr*. 2021;113(5):1199–208.
- Phulkard Siriya, Nakraksa P, Mo-Suwan L, Lawrence M. Progress towards achieving the recommendations of the commission on ending childhood obesity: A comprehensive review and analysis of current policies, actions and implementation gaps in Thailand. *Nutrients*. 2021;13(6).
- Soh Shu-E, Yap F, Tan KH, Shek LP-C, Godfrey KM, Meaney MJ, et al. Public Health Aspect of the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) Mother-Offspring Cohort. *Pre-emptive Med*. 2019;131–43.
- Skau Jutta KH, Nordin ABA, Cheah JCH, Ali R, Zainal R, Aris T, et al. A complex behavioural change intervention to reduce the risk of diabetes and prediabetes in the pre-conception period in Malaysia: Study protocol for a randomised controlled trial. *Trials [Internet]*. 2016;17(1):1–12. Available from: <http://dx.doi.org/10.1186/s13063-016-1345-x>
- Norris Shane A, Ho JCC, Rashed AA, Vinding V, Skau JKH, Biesma R, et al. Pre-pregnancy community-based intervention for couples in Malaysia: application of intervention mapping. *BMC Public Health [Internet]*. 2016;16(1):1–7. Available from: <http://dx.doi.org/10.1186/s12889-016-3827-x>

22. Gonzalez-Casanova Inez, Nguyen PH, Young MF, Harding KB, Reinhart G, Nguyen H, et al. Predictors of adherence to micronutrient supplementation before and during pregnancy in Vietnam. *BMC Public Health*. 2017;17(1):1–9.
23. Beddu Haris N, Stang SP, Masni US, Thamrin Y. Determinant of Preconception on Antenatal Care K1 in Pagimana Community Health Center, Banggai Regency. *EAS J Nurs Midwifery* [Internet]. 2020;0966(3):213–8. Available from: https://easpublisher.com/media/features_articles/EASJNM_24_213-218.pdf
24. Lassi Zohra S, Dean S V., Mallick D, Bhutta ZA. Preconception care: Delivery strategies and packages for care. *Reprod Health*. 2014;11(3):1–17.
25. Khan, Nadia N, Boyle J, Lang AY, Harrison CL. Preconception health attitudes and behaviours of women: A qualitative investigation. *Nutrients*. 2019;11(7).

Cite this article: Lanyumba FS, Syafar M, Darmawansyah, Moedjiono, Otoluwa AS. Implementation of Preconception Health Services in Some Southeast Asian Countries: A Literature Review. *Pharmacogn J*. 2024;16(3): 677-681.