Effectiveness of Instructional Module on Knowledge, Perception on Early Menarche Among Adolescent Girls: A Systematic Review

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Abstract

Background: Life is a dynamic process in which a different phase comes, and each life phase comes with different problems. Adolescence is a crucial time in women's lives, marked by the first menstrual period, a regular and desirable biological event, and significant substancial, emotional, cognitive, and social changes. Aim: This systematic review's objective is to summarize the effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls, identify which instruments are most frequently used to interventional package on knowledge, perception on early menarche among adolescent girls and report on findings of the same. Method: According to PRISMA guidelines, we look through the articles indexed in PubMed, Psyc INFO, Web of science, and CINAHL database using a combination of several expressions including "adolescent girls" AND "early menarche OR "knowledge and perception". Results: Five empirical studies were found to be pertinent to our research. A variety of instruments are used to evaluate the effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. We found that 73% girls had fairly adequate knowledge of menarche. The most of the girls 79.5% were unprepared for menarche. The primary source of information was mothers. About 80% of girls firmly believe that menstruation is an annoying event. Several women used sanitary napkins as an absorbent. There were highly statistically significant differences in the adolescent girls' overall knowledge and practice scores after completing the educational program $p > 0.05$. Conclusions: This review underlines that adolescent lacked adequate menstrual knowledge and skills in the pre-program phase. After the administration of the teaching program remarkable improvements in the knowledge and practice of the adolescent girls were noted. The educational intervention has thus successfully accomplish its goal of enhancing the knowledge and practice of menstrual hygiene.

Keywords: Adolescent Girls, Early Menarche, Knowledge and Perception

1. Introduction

Life is a dynamic process in which a different phase comes, and each life phase comes with different problems. Adolescence is a critical period in women's lives, marked by the first menstrual period, a natural and beneficial biological event, and significant physical, emotional, cognitive, and social changes. (Abu Tal Ha and Zakiul Alam, 2022) The stage between puberty and maturity is known as adolescence. Onset of menstruation is one of the markers of puberty and can therefore be considered as significant occasion in the life of teen age girls. Onset of menstruation occurs in most women between the ages of 10 and 16; however, it displays a striking variety of variations. The normal range for ovulation cycles is between 21 and 35 days. While most periods last 3 to 5 days, menstrual periods usually last 2 to 7 days. Irregular and longer cycles are common in the first few years after menarche (Shabnam Omidvar et al., 2018) A physiological process called menstruation signifies the commencement of reproductive life. However, in Indian society, due to cultural taboos, a lack of awareness, and incorrect information among adolescent females, it is often viewed as an impure event leading to minor limitations in their daily activities. (Neetu Singh et al., 2021) There is a significant knowledge gap about menarche in adolescent females. This gap has been revealed by a number of studies, which also revealed that when females initially began their periods, there was little knowledge of menstruation among them. Social prohibitions and parents' reluctance to openly discuss related issues have prevented adolescent girls from accessing the right information, particularly in rural and tribal areas. Numerous studies have revealed that infections brought due to an inadequate menstrual hygiene. (Subhash B. Thakre et al., 2011)

1.1 Review Aims

This review explores to provide a summary of

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effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. Consequently, the primary goal of this systematic review was to (1) summarize the knowledge, perception on early menarche among adolescent girls (2) identify which instruments are most commonly employed to evaluate knowledge, perception on early menarche among adolescent girls and (3) report on outcomes of effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls.

2. Material and Method

2.1 Study selection and data collection processes

This review was performed according to PRISMA guidelines. A comprehensive search of electronic databases including PubMed, Psyc INFO, Web of science, and CINAHL database was conducted as part of a systematic review examining outcomes of effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. All databases' searches were using a combination of the Following Free-Text Terms: "adolescent girls" AND "early menarche OR "knowledge and perception". In the initial phase, duplicates were eliminated, and reference lists of relevant articles were examined to identify additional studies that met the inclusion criteria. After this initial literature review, titles and abstracts were reviewed by reviewers to identify those that met the inclusion criteria [1].

2.2 Eligibility criteria

The studies included in this review met the following criteria: (1) effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls, (2) An intervention study focused on strategies to improve knowledge, perception on early menarche among adolescent girls, (3) Used quantitative research includes a non-intervention or pre-post comparison group to examine knowledge, perception on early menarche among adolescent girls and (4) The paper were published in a peer – reviewed journals with original research articles. Paper was rejected if they:(1) Without knowledge, perception on early menarche among adolescent girls, (2) were qualitative studies, review papers, case reports /case series, thesis/dissertations and (3) were not published in English.

2.3 Data extraction

A data extraction tool was used to systematically record data from included studies: (1) Study characteristics, author type of study design, year and country where data were collected, (2) Characteristics of adolescent girls: number of adolescent girls and age of adolescent girls, (3) Tools used to measure knowledge, perception on early menarche among adolescent girls and (4) Findings

2.4 Study quality assessment

Study quality was assessed using the quality assessment tools from: (1) the STROBE Reporting Guidelines for Observational Studies and (2) the Critical Review Form for Quantitative Studies. Each question could be answered fully (score = 2), partially (score = 1) and imprecisely (score = 0). For each study, a total score was generated. The studies were then rated as poor (total score below 12 points), fair (total score between 13 and 24 points), good (total score between 25 and 30 points) or excellent (total score between 30 and 36 points) based on the grades achieved. External experts reviewed the studies independently.

3. Results

Our search methodology turned up 327 studies (PubMed n = 148, PsycINFO n= 108, Web of Science n = 56, and CINAHL n = 15). Following the exclusion of duplicate publications, we identified 198 potential articles. In the reviewing stage, all identified studies' titles and abstracts were analyzed. This resulted in 129 studies being excluded, because they were considered unsuitable for the current review. Thus, for the eligibility phase, 38 studies were chosen. 33 studies were omitted because they did not match the selection criteria. Finally, Finally, 5 empirical studies were found to be pertinent to our investigation. **(Table 1).** The PRISMA flow diagram **(Fig. 1)** provide further information about the study selecting procedure.

3.1. The standard of research

The level of excellence was "fair" for two studies (Shivani Sharma and Kiran. B Pebma, 2019; Navya Sri Sreenivasa et al., 2017) and "good" for the remaining three (Gizachew Abdissa Bulto, 2021; Kusuma M. L and Mansoor Ahmed, 2016; Reda Ibrahim El-Mowafy et al., 2014)

3.2. Characteristics of the study

The key methodological components and The general characteristics of all the research analyzed are outlined in Table 1. Three studies are cross sectional studies (Gizachew Abdissa Bulto, 2021; Navya Sri Sreenivasa et al., 2017; Kusuma M. L and Mansoor Ahmed, 2016). One study is Non-Experimental study (Shivani Sharma and Kiran. B Pebma, 2019) and another study are Quasi-experimental design study (Reda Ibrahim El-Mowafy et al., 2014). All studies were published between 2014 and 2021. These listed studies were carried out in India, Central Ethiopia and Egypt.

3.3. Characteristics of adolescent girls

These 5 studies, the total number of women were 2737 adolescent girls with age group of range between 9-17 years.

3.4 Measuring tools used in adolescent girls on knowledge, perception on early menarche

This review of measuring tools used in adolescent girls on knowledge, perception on early menarche showed Gizachew Abdissa Bulto, 2021 used the self-

administered knowledge questionnaire, Shivani Sharma and Kiran. B Pebma, 2019 investigated structured interview schedule knowledge-based questionnaire; Navya Sri Sreenivasa et al., 2017 adopted pre-tested semi structured knowledge questionnaire; Kusuma M. L and Mansoor Ahmed, 2016 administered semi structured questionnaire and Reda Ibrahim El-Mowafy et al., 2014 administered Structure interview questionnaire and health educational program.

Table1: Participant Characteristics

Author(year)	Type of study design (Nation)			Measuring tools	Findings
Gizachew Abdissa Bulto, 2021	School-based cross-sectional study (Central Ethiopia)	403	9-17 years	Self-administered knowledge questionnaire	About 72.5% had a good general knowledge of menstruation and only 34.7% menstrual hygiene management was sufficient.
Shivani Sharma and Kiran. B Pebma, 2019	Non-Experimental study (India)	200	9-12 years	Structured interview schedule knowledge-based questionnaire	(73%) Girls had a fair understanding of menarche.. The majority of girls (79.5%) were unprepared for menarche.
Navya Sri Sreenivasa et al., 2017	Cross Sectional Study (India)	400	13-16 years	Pre-tested semi structured knowledge questionnaire	menstruation. The primary source of information was mothers. About 80% of girls firmly believe that menstruation is an annoying event. The majority of women used sanitary napkins as absorbents.
Kusuma M. L and Mansoor Ahmed, 2016	Cross Sectional Study (India)	1500	11-16 years	Semi structured questionnaire	Only (54%) students used pads. Back pain (38.33%) and dysmenorrhea (37.60%) were the major issues encountered and (39.66%) of subjects had sought medical advice.
Reda Ibrahim El-Mowafy et al., 2014	Quasi-experimental design study (Egypt)	234	14-16 years	Structure interview questionnaire and health educational program	educational program p > 0.05.

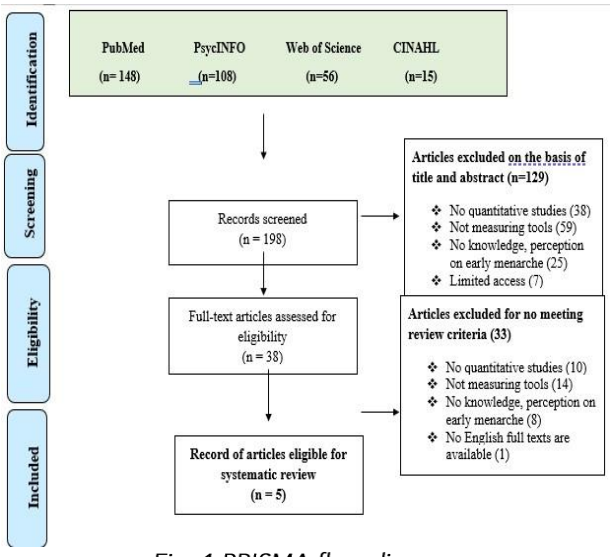

Fig. 1 PRISMA flow diagram

3.5 Outcomes of effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls

Among selected studies reported that effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. Gizachew Abdissa Bulto, 2021 found that 72.5% of the schoolchildren had a strong understanding of menstruation in general and only 34.7% of sufficient menstrual hygiene management (MMM). The study identified urban-resident adolescents (AOR=2.62, 95% CI: 1,534.48), gathered knowledge regarding menstruation from mothers (AOR=2.17, 95% CI: 1,183.96) and teachers (AOR= 5.09, 95% CI). : 2.679.67), school toilets with internal closure (AOR=2.82, 95% CI: 1.674.76), not missed school during menstruation (AOR=4.2, 95% CI: 1.5511.41), exhibited menstrual issues (AOR=2 .63, 95% CI: 1,494,64), had grey or white discharge from the vagina (AOR = 2.84, 95% CI: 1,664,85), and had a strong understanding of menstruation in general (AOR = 1.94, 95% CI). : 1,073,52) were significantly associated with adequate MHM practice. In non-experimental study, Shivani Sharma and Kiran. B Pebma, 2019 showed that 73% girls fairly sufficient knowledge about menarche. The most of girls (79.5%) were unprepared for onset of menstruation. There was a superficial positive correlation between the level of knowledge and getting ready for

menarche 0.033. A strong need to raise awareness and provide knowledge about menstruation before its onset. Navya Sri Sreenivasa et al., 2017 reported that the mean age was 14.16 years + 0.9 SD. Before taking part in menarche, about 66.25% of the students had heard of menstruation. The primary source of information was mothers. 80% of girls firmly believe that menarche is a troublesome event. The majority of women used sanitary napkins as absorbents. About 33.75% of the young children were unaware of menstruation before menarche. 7.75% of women were not allowed to go to school during menstruation. Kusuma M. L and Mansoor Ahmed, 2016 found that the majority of the girls were Hindu (75.73%), urban (69.60%), lower-middle class (48.60%) and upper-middle class (34.81%). The mean age at menarche of the study participants was 13,380.96 years. Only 335 (22.33%) of the students were aware of the menstrual cycle before they reached menarche. There was a statistically significant association between absorbent materials used during menstruation, socioeconomic status, and maternal literacy. Only 810 (54%) students used pads. Back pain 575 (38.33%) and dysmenorrhea 564 (37.60%) were the major problems encountered and only 595 (39.66%) of the subjects had sought medical advice. There is a significant gap in girls' knowledge and perception. The health-oriented behavior of the girls in the study is poor. Reda Ibrahim El-Mowafy et al., 2014 showed that there were statistically significant variations in overall knowledge and practice scores of the studied sample after the application of the educational program. The adolescent girls lacked adequate menstrual knowledge and practices in the pre-program phase. After the application of the program considerable increase in the knowledge and practice of the adolescent girls were noted. The educational program has thus successfully achieved its goal of positively enhancing menstrual hygiene education and practices.

4. Discussion

The primary goal of this review was to investigate the effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. The quality appraisal of the reviewed articles showed that they contented most of the required criteria includes relevance of the topic; The methodological quality, analysis of the outcomes, and resulting impact were all satisfactory. The reviewed articles showed effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. In cross-sectional study, 72.5% had a good general knowledge of menstruation and only 34.7% had adequate menstrual hygiene management Gizachew Abdissa Bulto, 2021. Supportively, the mean age of the participants was 15.28 1.58 years. About 85.1% of the participants had a high level of knowledge about puberty and 66.7% had a good attitude towards it. After the session, there was a considerable improvement in understanding of every aspect of reproductive health. Before the intervention, 37 (25.30%) participants had a good knowledge and its number increased significantly to 143 (95.3%) after the intervention. More than half of the respondents (54.1%) used pads and the frequency of changing pads twice a day was highest (50.8%). The initial reaction of 36.1% of the girls was fear/concern about menarche, while 44.3% experienced it as an expectant process. Girls were still faced with different kinds of restrictions, e.g., they were not allowed to visit holy places, not to cook and not to touch male family members, etc. Malihe Farid et al. (2019); Rupali N Baviskar et al. (2021); Sapkota D et al. (2013); Akwasi Boakye-Yiadom et al. (2018) Anjali Mahajan, Kanica Kaushal (2017). In addition, non-experimental study, Shivani Sharma and Kiran. B Pebma, 2019 showed that Approximately (73%) girls had insufficient knowledge of onset of menstruation. The most of the girls (79.5%) were unprepared for onset of menstruation. Similarly, Nilima Bhore, Vijaya R. Kumbhar, (2014); Venkatraman Chandra-Mouli and Sheila Vipul Patel (2017); Bhavna Langer et al. (2015); Teklemariam Gultie et al., (2014) and Baishakhi Paria, Agnihotri Bhattacharyya, Sukes Das (2014) described as the average age at menarche was 14,161.4 years. Teachers were the predominant informant about menstrual hygiene management. (43.1%), The majority of responders (90.7%) were well-versed in menstrual hygiene management. Most respondents (92.9%) and (96.5%) had access to both restrooms and water. Residence (AOR = 1.8, 95% CI: [1.42 1.52]) and the mothers level of education (AOR = 95% CI: [1.1513.95]) were independent predictors of knowledge about the management of menstrual hygiene. Only 37.52% of them before menarche girls were aware of menstruation. The awareness of menstruation varied significantly between urban and rural communities. Only 36% of urban girls and 54.88% of rural girls used and afterwards, handmade pads were reused. Only 47.63% of urban females cleaned their external genitalia adequately and 37.96% of rural girls. In this study, it was discovered that teenage females both in rural and urban settings had different hygiene practices. Compared to urban areas, menstrual hygiene standards in rural communities were substandard. Girls should be trained on good hygiene habits and encouraged to reject traditional norms, misconceptions and limitations related to menstruation. Our study, Navya Sri Sreenivasa et al., 2017 and Kusuma M. L and Mansoor Ahmed, 2016 reported that about 33.75% of the adolescents were unaware of menstruation before menarche. 7.75% of women were prohibited from attending school when they were menstruating. The primary source of information was mothers. About 80% of girls firmly believe that menarche is a troublesome event. The majority of women used sanitary napkins as absorbents. Only (54%) students

used pads. Back pain (38.33%) and dysmenorrhea (37.60%) were the main problems encountered and (39.66%) of subjects had sought medical advice. Supportively, Neha Choudhary Manoj K. Gupta (2019); M. G. Aswathy, C. R. Saju, Jenyz M. Mundodan (2019); Natalie Brown et al. (2022); Dominic Odwa Atari et al., (2021) showed that the mean age at menarche was 13.41 1.07 years. Females from urban areas used pads substantially more frequently (56.2%) than girls from other areas. In the study area, only around 25% of females never received menstrual hygiene education. Among urban females, awareness of the adolescent health clinic was noticeably higher. Adolescent girls from rural and urban areas showed significant disparities in their understanding of knowledge, perception, and practices related to menstrual hygiene. The age at menarche ranged from 7 to 14 years with a mean age of 12.06 years SD=0. 972. More than a quarter of the girls, 28.7%, had no previous knowledge of menstruation at the time of menarche. The mother was the most important source of information on menstruation with 68.8%, followed by girlfriends with 19.2%. The majority of 61.3% of the subjects had exact knowledge about the cause of menstruation. More than half of the respondents, 53.7%, missed school days during menarche. Knowledge of menstruation was good for adolescent girls compared to other studies in India. Awareness programs for adolescent girls need to be developed and promoted at an early age before menarche. Mothers should be educated as they are an important source of information for their daughters. Our review study, Reda Ibrahim El-Mowafy et al., 2014 reported that there were highly statistically significant differences in the total knowledge and practice score of the studied sample after the implementation of the educational program $p > 0.05$. Supportively, Kala Barathi S and Ananthi S (2020); Sitti Hadriyanti Hamang et al., (2020); Ashitha Aravindhakshan et al. (2020); S. Sasikala, T. Kalyani Devi (2017) and Surya Meenakshy, Saramma. N. B, D. Santhakumari (2018) showed that differences in knowledge in adolescent girls before treatment (pre-test) with a proportion of 35.4%, after treatment (post-test) with 75.4% and differences in attitudes in young women before treatment (pre-test) with a percentage of 75.38%, after treatment (post-test) 92.31%, the Wilcoxon test scores achieved a score of 0.001 in subjects who received health education through learning modules related to juvenile dysmenorrhea. The mean knowledge scores after the test are higher than the mean knowledge scores before the test in all areas. The calculated t-value of 21.63 proved to be statistically significant ($p<0.001$). The structured curriculum was an effective way to significantly improve mothers' knowledge of how to prepare their girls for menarche.

Finally, our study reveals the scarcity of published studies on effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. Further research in this area would be beneficial in order to determine whether efforts to enhance effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls are effective. There is also a scarcity of data on follow-up assessments, as well as the transfer and generalization outcomes of effectiveness of instructional module on knowledge, perception on early menarche among adolescent girls. We specifically eliminated qualitative research, despite the fact that they contribute significantly to the literature in this field, because their conclusions cannot be scaled up to large groups of individuals with the same level of dependability as quantitative analysis.

5. Conclusion

Our review shows that young children lacked adequate menstrual knowledge and practices prior to the program. Following the program's implementation considerable improvements in the knowledge and practice of the adolescent girls were noted. The educational program has thus successfully achieved its goal of positively influencing menstrual hygiene knowledge and practice. It was necessary to provide young girls with reliable and sufficient menstrual information and its proper management. Girls in the premenstrual period and later should be given adequate information about the use of sanitary napkins, wipes and their disposal. These issues must be addressed in order to change misconceptions, limitations, traditional taboos and myths related to menstruation and to enhance and encourage menstrual hygiene practices. Health education strategies need to be developed for better women's health.

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