

Effect of structured audio educational sessions on visually challenges adolescent school-girls' knowledge and practices regarding menstruation

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Abstract: Visual challenges adolescent girls (either blind or week vision) is a group of disable girls who needs a special attention especially during their start of reproductive period with menstruation since they are not widely being properly addressed. *The study aimed to investigate the effect of structured audio educational sessions on visually challenges adolescent school-girls' knowledge and practices regarding menstruation. Design:* A quasi-experimental one-group pre/post-test research design was utilized. *Setting:* Al-Nour School for the Blind, Mansoura, Egypt. *Sample:* A convenient sample of fifty-three visually challenges adolescent school-girls. *Tools:* Three tools were used for data collection; I: Structured interviewing Questionnaire which consisted of three parts; first part to assess socio-demographic data; second part to assess menstrual characteristics; and the third part to assess participants' knowledge regarding menstruation. II: menstruation check list to assess participants' practices regarding menstrual hygiene and management of its minor alignment. III: School-girls' satisfaction Questionnaire with the audio-educational sessions regarding menstruation. **Results:** There were lack of visually challenges adolescent school-girls' knowledge and practices regarding menstruation before implementing the Audio educational session. In addition, there were an improvement in the total knowledge and practices scores of the participants regarding menstruation after provision of the Audio educational sessions with highly statistically significant differences ($P < 0.001$). **Conclusion:** the audio educational sessions were effective in enhancement of the visually challenges adolescent school-girls' knowledge and practices regarding menstruation. **Recommendation:** Raising awareness of adolescent school-girls regarding menstruation by further educational programs especially for school-girls with disabilities.

Keywords: Menstruation, Visually challenges adolescent, menstrual knowledge and practices.

1. INTRODUCTION

Literally visually challenges individuals are called visual impairment individuals. According to World Health Organization (WHO) report, visual impairment individuals are those who have eyes condition either congenital or by accident that affect the visual system and vision functions (*WHO a, 2019*). Visually challenges adolescent girls are estimated to be more than adolescent boys. As the girls biological changes develop, visual challenges adolescent girls face many challenges because of their disabilities, they may need for a help even in their daily living activities. Having any physical disability carries stigma for the disable individual and may face varieties of discrimination when they are menstruating (*Wilbur et al., 2019*). Menstruation is an event of life that can transit a girl from childhood to womanhood. It is a very sensitive landmark event in a female life; even normally adolescent girls may have lack of awareness of proper management during menstruation (*Flagg & Pillitteri, 2018.*)

Menstruation is also called monthly bleeding, or menstrual period. Menstruation is the female life process from menarche to menopause. With menstruation, the girl explore the biological development process, to have the power to generate in a community with mature body and mind. When first menstruation occurs which is called menarche, the girl starts a real being as a female, starting asking about reproductive organs function and physiology, menstrual pattern, nature and normality to judge about her own menstrual wellbeing. If communities and institutions provide awareness and answering all girls' questions regarding menstruation, even without asking as most girls are mostly shy to ask, this may expand the inner girl feeling of a real self-trust and self-confidence (*Pope & Wurlitzer, 2017*).

Adolescent girls' awareness of menstruation physiology, hygiene and its minor alignment figure the correct girls' response for managing. Menstrual hygiene management (MHM) is an essential aspect of adolescent girls' awareness toward menstruation. According to *WHO and UNICEF, (2012)* menstrual hygiene can be defined as using a clean menstrual management material to absorb the menstrual blood, using soap and water for washing the body as required, and having access to discard the spoiled menstrual materials and know how to manage menstruation with dignity and without discomfort or fear. Over the last decade, the attention on MHM has increased. Examples include the socio-ecological framework for MHM developed for school girls and their families (*Emory University, UNICEF, 2013*). In addition, MHM had included in the Sustainable Development Goal 6 (*UNICEF, 2015*).

For visually challenges adolescent girl, it is very difficult to manage menstruation with improper knowledge and practices. Therefore, visually challenges adolescent girls have great efforts to know and practice the menstrual hygiene in a proper way. Good hygienic practices such as the proper use of sanitary pads and adequate washing of the genital area and hands are essential to be known for all adolescent girls for practicing during menstruation (*White, 2016*). Adolescent girls constitute a vulnerable group not only with respect to their social status but also in relation to their health. The issue of menstrual hygiene was inadequately acknowledged and has not received proper attention among visually challenges girls. Thus, the consequences of reproductive tract infections are severe and may result in significant negative impact to adolescent health including chronic pelvic pain, painful periods and in severe cases of infertility. Reproductive tract infections, which have become a silent epidemic that devastates adolescent's lives and closely related to poor menstrual hygiene (*Samantaray et al., 2017*).

Significance of the study

World Health Organization (WHO b, 2019) reported that globally, at least 2.2 billion people have a vision impairment and blindness, of whom at least 1 billion have a vision impairment that could have been prevented and has yet to be addressed. In Egypt, the prevalence of low vision in all ages in is 3.1%, which is nearly equal to 2.3 million people (*Ramadan, 2011; Pokharel, 2010*). **World Health Organization (WHO) and Ministry of Health and Population (MOHP) (2013)** reported that the visually impaired people reached 3 million in Egypt. According to the fifth axis of the social dimension of Egypt's 2030 strategy, providing support for the marginalized segments of society and achieving protection by providing care is essential for achieving the social justice for all persons in the society. One important marginalized segment of society is the visual challenges adolescence girls. They have limitations to perform their activities due to loss of vision, and also limited ability to learn from observing and performing self-care activities. Among the most important senses that Almighty Allah have replaced the visual challenges individuals is the sense of hearing, followed by the sense of touch. Therefore, these girls acquire different knowledge and skills through the sense of hearing and the sense of touch more than any other senses. Assessment of the visual challenges adolescent girls' knowledge and practices regarding menstruation is very important, also providing supporting educational materials to enhance their monthly experience of menstruation is very needed. Egyptian studies which investigated effect of audio-educational sessions on the visual challenges adolescent girls' knowledge and practices regarding menstruation are so limited thus, this study was conducted.

Operational definition:

Visual challenges adolescent school girls: are adolescent girls who had visual impairment which mean that their visual acuity is ranged from 6/60 to 6/24 or those who are blind which mean that their visual acuity is less than 6/60 either congenital or by any other acquired cause.

The aim of the study

The present study aimed to investigate the effect of structured audio educational sessions on visually challenges adolescent schoolgirls' knowledge and practices regarding menstruation.

Research hypothesis:

This study hypothesized that:

1. Visually challenges adolescent schoolgirls who receive structured audio educational sessions exhibit improvement in knowledge regarding menstruation post implementation of the educational sessions than before.
2. Visually challenges adolescent schoolgirls who receive structured audio educational sessions exhibit improvement in practices regarding menstruation post implementation of the educational sessions than before.

2. MATERIAL AND METHODS**2.1 Research Design**

A quasi-experimental one group pre/ post-test research design was utilized to conduct this study to achieve the study aim.

2.2 Setting

This study was conducted at Al-Nour School for the Blind, Mansoura, Egypt. Al-Nour School for the Blind is the only school that serves Dakahlia Governorate. It was established in 1990 and aimed to provide knowledgeable experiences to help the visually challenges students to deal healthy and safely with the external environment and community in addition to the providence of the educational opportunities as their mates in governmental and private schools who are without disabilities. The School includes visually challenges (blind and weak vision) boys and girls at Kindergarten, primary, preparatory and secondary level of learning. The school has an internal residence for students from long distances. The school schedule timings start from 8.00 AM and end at 3.00 PM.

2.3 Sampling

A convenient sampling technique of 53 visually challenges menstruated adolescent girls were included regardless the cause of their disability, who have no hearing or verbal response problem and were available at the previous setting throughout the period between the start of February 2019 to the end of April 2019. This experimental research proposed to investigate the effect of structured audio educational sessions on visually challenges adolescent school-girls' knowledge and practices regarding menstruation. Based on data from literature (*Neelkanth, Singh & Bhatia, 2017*). Considering level of significance = 5%, Power = 80%, Type of test = two-sided, the following formula is used for calculating sample size is $n = [2(Z\alpha/2 + Z\beta)^2 \times p(1-p)] / (p_1 - p_2)^2$ where n = sample size required in each group, p = pooled proportion (proportion of event in group 1 + proportion of event in group 2)/2, $p_1 - p_2$ = difference in proportion of events in two groups, $Z\alpha/2$: This depends on level of significance, for 5% this is 1.96, $Z\beta$: This depends on power, for 80% this is 0.84. $n = [2(1.96 + 0.84)^2 \times 0.58(1-0.58)] / (1.00 - 0.16)^2 = 52.9$. Based on above formula the sample size required per group is 53

2.4 Tools of Data Collection

Tool (1): A structured Interview Questionnaire which designed by the researchers after reviewing the related literature (*Emory University, UNECF, 2013*). It consists of three parts. The first part related to socio-demographic characteristics such as age, educational level, family monthly income, and area of residence, the second part concerned to the menstrual characteristics such as age at menarche, regularity of menstruation, duration of menstrual cycle, material used during menstruation for absorbing the menstrual blood and source of information regarding menstruation. While, the third part of the structured Interview Questionnaire concerned with assessing visually challenges school-girls' knowledge regarding menstruation. It consists of 22 multiple choice questions; the first 11 questions related to female reproductive system anatomy and physiology of menstruation, the next 4 questions related to management of minor alignments during menstruation and the next 7 questions related to menstrual hygiene. Each question has 3 options, the right option was scored as one while the other 2 options scored as zero. The total scores ranges from 0 to 22.

Tool (2): Menstruation checklist. It was developed by the researchers after an extensive review of literature in consultation with experts for assessment of practice regarding menstrual hygiene of visually challenges schoolgirls and management of its minor alignment. It contains 20 items; the first 15 items related to menstrual hygiene and the next 5 items related to management of minor alignments during menstruation. Each item has two responses, the correct response was scored as one while the incorrect response was scored as zero.

Scoring system for knowledge and practice: The obtained score was converted into percentage. If the total percentage was less than 65, it interpreted as poor knowledge or practices, if the total percentage was more than or equal 65, it interpreted as good knowledge or practices. This tool was assessed three times; the first time was at the baseline assessment (pretest), the second time was after one month of the enrolment after her next menstruation finished (post I), and the third time after three months of the enrolment (post II).

Tool (3): School-girls' satisfaction with the audio-educational sessions regarding menstruation: it was adapted by the researchers after reviewing the national and international literature (*Jeyanthi, 2017*). It consists of ten items, five items related to satisfaction with the researchers performance at the educational sessions and five items related to the audio-educational sessions. Each items had a three point Likert scale responses. This tool was assessed after the end of the educational sessions after the third session.

Tools validity and reliability:

Tools validity tested by five experts; two expertise in maternity nursing and two expertise in community nursing and one expertise in obstetric medicine. Their suggested configurations were made, such as more simplifying the Arabic language of certain statement of assessing the school-girls' knowledge and practice. Tools reliability for the knowledge questionnaire was 0.857, for practice check list was 0.865 and for satisfaction questionnaire regarding the educational sessions was 0.877 by Alpha Cronbach test. Which indicates an accepted reliability of the tools.

2.5 Methods:

1. Ethical consideration:

The study was conducted after obtained ethical clearance from Research Ethics Committee, Faculty of Nursing, Mansoura University and a permission letter was obtained from Al-Nour School for the Blind, Mansoura, Egypt to conduct the research. A written consent made by braille method was obtained from all the participants before the data collection after clarification the purpose and benefits of the research and that the research did not expose the participants to any risks. Confidentiality was maintained throughout the study and the safety of the intervention. In addition, the right to be withdraw from the study was permitted.

Pilot study

Pilot study carried on 6 visually challenges Schoolgirls to test the objectivity and applicability of the research tools and the feasibility of the research process. Participants in the pilot study were excluded from the research study. The pilot study revealed the feasibility, effectiveness and appropriateness of the study instruments.

Data collection

The required data collected from the beginning of February 2019 to the end of April 2019. The baseline data collected by a structured interview questionnaire (Tool I) (pretest) to collect the school-girls' socio-demographic data, menstrual characteristics and knowledge regarding menstruation. Also school-girls' practices regarding menstruation was assessed by a non-observational Checklist (Tool II). After completion of the educational sessions and providing the Arabic booklet which made by braille method as a supportive material. The school-girls' knowledge regarding menstruation was reassessed by the same pretest questionnaire (post I for knowledge) immediately after the third session, while the school-girls' practices was reassessed after one month of the enrollment after finishing the coming menstruation (post I for practice). Finally, the school-girls' knowledge and practices were reassessed (Post II for both knowledge and practices) and also school-girls satisfaction with the educational sessions (Tool III) was assessed.

Research process:

Three phases was utilized to carry out the research process. Firstly, was the preparatory phase, secondly, was the implementation of the structured audio-educational sessions and thirdly, was measuring the outcomes evaluation.

1) Preparatory phase

After reviewing the relevant literature to the study, the tools were designed, the educational sessions and the supportive material (an Arabic booklet designed by braille method) were developed and finally the pilot study was conducted to assess applicability of the study tools after confirming the content validity of the developed tool and the educational sessions and material by a panel of experts in maternity nursing, community nursing and obstetric medicine.

Modifications were made according to their comments (to simplify the Arabic language used in the tools and the educational material and sessions).

Development of the structured audio educational sessions. The researcher prepare three structured audio-educational sessions which given for three sequent days. It designed in a simple Arabic language to improve the knowledge and practices of the visually challenges school-girls adolescents regarding female reproductive organs anatomy and physiology of menstruation, menstrual hygiene and management of its minor ailments. In addition, the supportive material which was an Arabic booklet made by braille method was prepared, the content of the supportive booklet was prepared by the researchers in an Arabic simple understood language and then a permission to print the educational booklet in a braille method was attained from the director of the central library at Mansoura University. The researchers bring a soft copy of the educational booklet to the Central Library as they have the printer, which programed to print the given educational material to a braille paper, which collected and made in a booklet form designed in a braille method.

2) Implementation

First obtaining a permission letter from El-Nour school for the blind to conduct the study and a consent from the adolescent school-girls who agree to be included at the research were taken. The total number of the participants was fifty-three, they distributed into three small groups, the first two groups consists of 18 school-girls for each group and the last group consists of 17 school-girls. Each researcher take one group to illustrate the educational sessions to the students. On the recruitment day, in which the base line assessment was performed, the researchers introduce themselves to the visual challenges adolescent schoolgirls and the aim of the educational sessions were illustrated to the participants. The researchers took assessment of the participants' socio-demographic, the menstrual characteristics, knowledge and practices regarding menstrual hygiene and its minor alignments after distributing structured questionnaire and a non-observational checklist. Demonstrators Volunteers from Woman's Health and Midwifery Nursing Department, Faculty of Nursing, Mansoura University helped each participants in each group to blot their answers in the questionnaire and the checklist form. The baseline assessment taken about fifteen minutes for each participant to be completed by the researchers and their volunteer assistances. A break for half an hour was taken, then the first educational session started in the form of audio lecture provided by the researchers in an Arabic simple language easily understood to the participants. The objective of the first educational session was to provide basic scientific facts about reproductive system anatomy and physiology of menstruation. On the second day of the enrollments, a brief summary was given about the previous first session then the second educational session was provided, the objective of the second session was to illustrate the menstrual hygiene items and importance. On the third day of the enrollment, a brief summary was given about the previous second session then the third educational session was provided, the objective of the third session was to illustrate simple measures for management of menstruation minor alignments. After the end of the third educational session, the supportive educational booklet, which made in simple Arabic language by braille method was given to all participants. At the end of the each session, the researchers answered all participants' questions. Each educational session take about forty- five minutes with a break in between.

3) Outcomes evaluation

The outcome evaluation conducted immediately at the end of the third and last educational session, the participants were re-assessed for their knowledge regarding menstrual hygiene and management of it minor alignments (Immediate post I for knowledge). After one month of the enrolment, the participants were re-assessed for their practices regarding menstrual hygiene and management of it minor alignments (post I for practice). Then after three months of the enrolment, the researchers re-assess the participants' knowledge and practices regarding menstrual hygiene and management of its minor alignment (Post II for knowledge and practice). It take about thirty minutes to be completed by the researchers for each school-girl adolescents.

Data analysis:

Statistical Package for Social Sciences (SPSS) version 21.0 used for the statistical analysis of the obtained data. Analysis and interpretation of the data were carried out by using descriptive and inferential statistics. Descriptive statistics such as mean, frequency, percentage and standard deviation was used for quantitative variables. Chi-square test used for non-continuous variables such as the visually challenges school-girls knowledge and practices Pre and post the educational sessions differences. The Cronbach"s alpha was used to assess the reliability of a set of components of the structured knowledge questionnaire, non-observational practice checklist and satisfaction questionnaire. Statistical significance was

considered at p -value < 0.05 , a highly significant difference obtained at $p < 0.0001$ and non-significant difference obtained at $P > 0.05$.

3. RESULTS

Table (1): Reveals that mean of age for the visually challenges adolescent schoolgirls was 13.2 ± 1.0 . Also, table one presents that more than three- fifths of the schoolgirls (66% & 64.2% respectively) were residing in rural areas and had inadequate family income. Furthermore, slightly less than one- third of their father (32.1%) were middle educated and slightly more than one- third of their mother (37.7%) were primary educated.

Table (2): Shows that the mean of age of menarche of the visually challenges adolescent schoolgirls was 13.9 ± 1.5 . Moreover, more than two- thirds of them had irregular menstruation, their interval between menstruations were above 35 days, and their menstruation lasts from 3 to 5 days (71.7%, 67.9% & 69.8% respectively). In addition, all of the visually challenges adolescent schoolgirls (100%) had minor alignments during menstruation and slightly more than two-fifths of them (41.5%) had abdominal pain during menstruation. **Table (3):** Demonstrates that immediately after the providence of audio educational sessions and after three months of the enrolment, most of the visually challenges schoolgirls' correct knowledge regarding menstruation increased than pre-intervention in all items with highly statistically significant differences.

Also, table three illustrates that (100%, 98.1%, 94.3%, 94.3% & 94.3% respectively) of participants had correct knowledge immediately after the providence of audio educational sessions (post I) while after three months of the enrolment, it reached (96.2%, 90.6%, 92.5%, 92.5% & 90.6% respectively) (post II) regarding concept of ovulation, composition of the menstrual cycle, causes of menarche, concept and causes of menstruation. Concerning management of minor alignments during menstruation, table three shows that most of the visually challenges school-girls (96.2%, 92.5% & 92.5% respectively) had correct knowledge immediately after the providence of the educational sessions (post I), while after three months of the enrolment, it reached (88.7%, 90.6% & 94.3% respectively) (post II) regarding measures used for managing the menstrual pain, measures used for managing breast pain during menstruation and measures used for managing urine retention during menstruation. Concerning menstrual hygiene, it is obvious that most of the visually challenges schoolgirls (98.1%, 94.3% & 94.3% respectively) increased in their correct knowledge immediately after the providence of the educational sessions (post I), while after three months of the enrolment, it reached (86.8%, 86.8% & 90.6% respectively) regarding ways of drying the clothes, material used for cleaning genitalia, and time of changing the sanitary bad with highly statistically significant differences.

Table (4): Presents that (100%, 98.1%, 96.2%, 96.2% & 94.3% respectively) of the visually challenges schoolgirls adolescents after one month of the enrolment after finishing their next menstruation (post I) and (83.0 %) after three months of the enrolment (post II) had correct practices regarding warp sanitary pads before disposal, removing sanitary bad from front to back, changing undergarment more than twice daily and washing clothes with soap and water, and changing cloths daily with highly statistically significant differences. Concerning practices to manage minor alignments during menstruation, most of the visually challenges schoolgirls adolescents (92.5%, 88.7%, 88.7%, 88.7% & 88.7% respectively) after one month of the enrolment after finishing their next menstruation (post I) and (83.0%) after three months of the enrolment (post II) had correct practices regarding drink warm fluid to decrease lower abdominal pain and avoid chocolate, cola and coffee during menstruation and regarding all practices for managing minor alignments during menstruation.

Table (5): Illustrates that most visually challenges adolescent schoolgirls (92.5% & 90.6% respectively) had total incorrect knowledge and incorrect practices scores regarding menstrual hygiene and management of its minor alignments before providing the structured audio educational sessions (pretest). While, majority of them (84.9% & 75.5% respectively) had correct knowledge scores immediately post providing the structured audio educational sessions (post I) and after three months of the enrolment (post II). Concerning the schoolgirl's practices regarding menstrual hygiene and management of its minor alignments after providing the structured audio educational sessions, table five shows that most of the participants (90.6%) had correct practice after one month of the enrolment and majority of them (83.0%) had correct practices after three months of the enrolment with highly statistically significant differences.

Table (6): Denotes that majority of the visually challenges schoolgirls adolescents (88.7%, 86.8% & 79.2% respectively) were satisfied with the overall sessions, the structure of the sessions and the covered content and the explanation of the educational sessions.

Table 1. Distribution of visually challenges adolescent school-girls according to their socio-demographic characteristics (n=53)

Socio-demographic characteristics	No.	%
Age		
12 years	18	34.0
13 years	15	28.3
14 years	14	26.4
15 years	6	11.3
Mean \pm SD	13.2 \pm 1.0	
Area of residence		
Urban	18	34.0
Rural	35	66.0
Father education		
Illiterate	6	11.3
Read and write	9	17.0
Primary	16	30.2
Middle education	17	32.1
High education	5	9.4
Mother education		
Illiterate	3	5.7
Read and write	10	18.9
Primary	20	37.7
Middle education	11	20.8
High education	9	17.0
Monthly income of the family		
Adequate	19	35.8
Inadequate	34	64.2

Figure 1. Shows that majority (88.7%) of the challenges adolescent school-girls were blind.

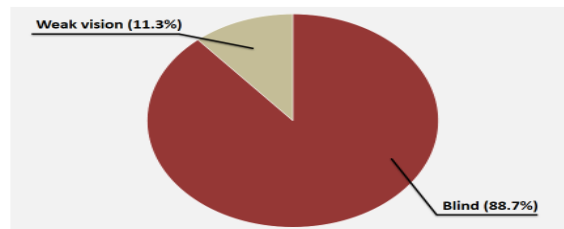


Figure 1: State of visually challenges adolescents school-girls' vision (n= 53)

Figure 2. Presents that almost two-thirds (66%) of the visually challenges adolescents school-Al-Nour school for the blind as internal residence

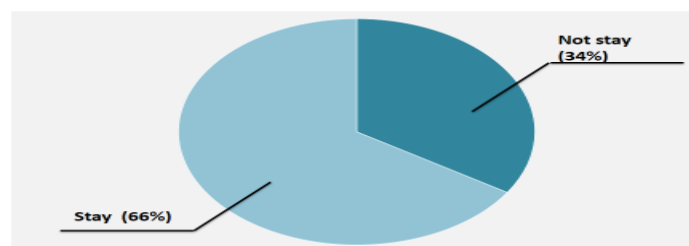


Figure 2: State of Staying as internal residence at Al-Nour School for the Blind (n= 53)

Figure 3. Denotes that majority (79.2%) of the visually challenges adolescents school-girls' source of information regarding menstruation were their mothers while, only 15.1% were their teachers and 5.7% were from media.

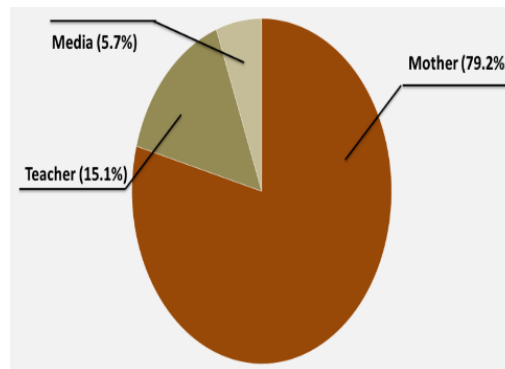


Figure 3: Source of information regarding menstruation (n= 53)

Table 2: Distribution of visually challenges adolescent school-girls according to their menstrual characteristics (n=53)

Menstrual Characteristics	No.	%
Age at Menarche		
12 – 14 years	31	58.5
15 – 16 years	22	41.5
Mean ±SD	13.9 ±1.5	
Regularity of Menstruation		
Regular	15	28.3
Irregular	38	71.7
Interval between Menstrual Cycles		
28 – 35 day	17	32.1
>35 days	36	67.9
Duration of Menstrual Flow		
<3 days	3	5.7
3 – 5 days	37	69.8
6 – 7 days	13	24.5
Presence of Minor Disorder		
Yes	53	100.0
No	0	0.0
Type of alignment disorder		
Abdominal pain	22	41.5
Back pain	14	26.4
Breast pain	5	9.4
Nausea	12	22.6

Table 3: Distribution of visually challenges school-girls according to their correct knowledge regarding menstruation (n= 53)

Knowledge regarding menstrual physiology, hygiene and its minor alignments	Pre-intervention	Immediately after-providing the structured audio-educational sessions	After three months of the enrolment	Chi square test	
	%	%	%	X ²	p
Female reproductive system anatomy and physiology of menstruation					
1. Concept of menstruation	28.3	94.3	92.5	73.828	<0.001
2. Causes of menstruation	35.8	94.3	90.6	58.436	<0.001
3. Proper time for menarche	28.3	86.8	86.8	54.924	<0.001
4. Female reproductive organ	32.1	92.5	86.8	56.604	<0.001
5. Organ responsible for ovum maturation	28.3	92.5	94.3	73.828	<0.001

6. Number of ovum released in every month	22.6	90.6	88.7	72.070	<0.001
7. Concept of ovulation	28.3	100.0	96.2	91.659	<0.001
8. Causes of menarche	24.5	94.3	92.5	80.527	<0.001
9. Composition of the menstrual cycle	32.1	98.1	90.6	71.249	<0.001
10. Duration of normal menstrual cycle	24.5	28.3	41.5	3.909	0.142
11. Average blood loss during menstruation	22.6	20.8	20.8	0.075	0.963
Management of Minor Ailments of Menstruation					
12. Measures used for managing the menstrual pain	35.8	96.2	88.7	59.018	<0.001
13. Measure used for managing breast pain during menstruation	20.8	92.5	90.6	81.232	<0.001
14. Measure used for managing urine retention during menstruation	22.6	92.5	94.3	83.976	<0.001
15. Measure used for managing anxiety	20.8	88.7	77.4	59.745	<0.001
Menstrual Hygiene					
16. Concept of menstrual hygiene	22.6	90.6	84.9	67.133	<0.001
17. Main purpose menstrual hygiene	26.4	30.2	35.8	1.121	0.571
18. Best method to absorb menstrual blood	30.2	60.4	54.7	10.929	0.004
19. Time of changing the sanitary pad	30.2	94.3	90.6	67.691	<0.001
20. Ways to dispose the sanitary pad	22.6	92.5	90.6	77.779	<0.001
21. Ways of drying the clothes	22.6	98.1	86.8	82.361	<0.001
22. Best hand hygiene method during menstruation	20.8	35.8	30.2	2.998	0.223
23. Direction of perineal care cleanliness	20.8	32.1	37.7	3.760	0.153
24. Material used for cleaning genitalia	41.5	94.3	86.8	45.222	<0.001
25. Bath pattern during menstruation	34.0	86.8	77.4	37.521	<0.001

P ≤ 0.001 highly statistically significant

Table 4: Distribution of visually challenges school-girls according to their correct practices regarding menstruation (n= 53)

practices regarding menstrual hygiene and management of its minor ailments	Pre-intervention	After one month of the enrolment	After three months of the enrolment	Chi square test	
	%	%	%	X ²	p
Practices related to menstrual hygiene					
Do you					
1. Perform daily path	20.8	92.5	84.9	73.359	<0.001
2. keep perineal area clean dry	71.7	88.7	81.1	4.889	0.087
3. Wash perineal area with soap and water	5.7	92.5	83.0	100.479	<0.001
4. Clean perineal area from front to back	5.7	86.8	83.0	91.545	<0.001
5. Use cotton undergarments	5.7	90.6	83.0	97.335	<0.001
6. Wash undergarments with soap and water	92.5	90.6	100.0	4.947	0.084
7. Change undergarment more than twice daily	9.4	96.2	83.0	99.335	<0.001
8. Change cloths daily	13.2	94.3	83.0	88.321	<0.001
9. Wash cloths with soap and water	9.4	96.2	83.0	99.335	<0.001
10. Cloths dried in sunlight	88.7	94.3	94.3	1.622	0.444
11. Cloths stored in clean and dry place	9.4	90.6	83.0	89.520	<0.001
12. Remove sanitary pads from front to back	13.2	98.1	83.0	95.323	<0.001
13. Change sanitary pads more than 3 times	88.7	94.3	96.2	2.539	0.281
14. Warp sanitary pads before disposal	13.2	100.0	83.0	99.125	<0.001
15. Sanitary pads disposed in separate dustbin	13.2	86.8	83.0	76.512	<0.001

Practices related to management of minor alignment during menstruation					
Do you					
16. Drink warm fluid to decrease lower abdominal pain and avoid chocolate, cola and coffee during menstruation	11.3	92.5	83.0	88.815	<0.001
17. Perform regular exercise such as walking	9.4	88.7	83.0	86.598	<0.001
18. perform abdominal massage to decrease abdominal pain	5.7	88.7	83.0	94.359	<0.001
19. Eat fruits and vegetables containing to reduce tension and anxiety	5.7	88.7	83.0	94.359	<0.001
20. Avoid salty and spicy foods to decrease urinary retention during menstruation	1.9	88.7	83.0	102.509	<0.001

P ≤ 0.001 highly statistically significant

Table 5: Comparison of the school-girls’ total knowledge and practices scores regarding menstruation pre- and post-intervention (n=53)

Knowledge and practices of visually challenges adolescent schoolgirls	Pre-intervention		Immediately after-providing the structured audio educational sessions		After three months of the enrolment		Chi square test	
	No.	%	No.	%	No.	%	X ²	p
Knowledge								
In correct (<65%)	49	92.5	8	15.1	13	24.5		
Correct (≥65%)	4	7.5	45	84.9	40	75.5	76.616	<0.001
Practice								
Incorrect (<65%)	48	90.6	5	9.4	9	17.0		
Correct (≥65%)	5	9.4	48	90.6	44	83.0	89.520	<0.001

P ≤ 0.001 highly statistically significant

Table 6. Denotes that majority of the visually challenges schoolgirls adolescents (88.7%, 86.8% & 79.2% respectively) were satisfied with the overall session, the structure of the session and the covered content and the explanation of the educational session.

Table 6: Distribution of participants according to their satisfaction’ score regarding the structured audio-educational sessions on menstruation (n= 53)

Structure audio educational session	Disagree		Uncertain		Agree	
	No.	%	No.	%	No.	%
1. Was structured well	5	9.4	2	3.8	46	86.8
2. Was satisfactory explained by the researchers	5	9.4	6	11.3	42	79.2
3. Was adequately covered by the researchers	5	9.4	6	11.3	42	79.2
4. Had a successful communication process	8	15.1	26	49.1	19	35.8
5. Had an easy technique to follow and understand	6	11.3	34	64.2	13	24.5
6. Illustrated clearly with examples	6	11.3	32	60.4	15	28.3
7. Had adequate duration	19	35.8	18	34.0	16	30.2
8. Was easy to practice	14	26.4	16	30.2	23	43.4
9. Added knowledge regarding menstrual hygiene and management of its minor discomforts	8	15.1	9	17.0	36	67.9
10. On the whole was effective	2	3.8	4	7.5	47	88.7

P ≤ 0.001 highly statistically significant

4. DISCUSSION

Adolescence is a critical period in the girls' lives. It is a transition from the girl childhood to the responsibilities of adulthood. Adolescence when complicated with any physical disability need special focus to increase the adolescent female correct knowledge and practices and prevent any physical or psychological hazards. The current study aimed at investigating the effect of structured audio-educational sessions on visually challenges adolescent school-girls' knowledge and practices regarding menstruation.

The current study finding revealed that majority of the visually challenges adolescent school-girls source of information regarding menstruation was their mothers and minority of them had their information from their teachers and mass media. This study finding may be attributed to that menstruation as a topic not covered as educational needs for the school-girls and that mass media is not concerned with providing information regarding such sensitive topics. This study finding is congruent with *Neelkanth, Singh & Bhatia (2017)* who conducted an experimental study on 197 Indian adolescent school-girls to assess the higher secondary school girls' knowledge and practices of menstrual hygiene after providence of educational intervention. They reported that the mother was the primary source of information regarding menstruation and its hygiene. At the opposite site to our study finding, a cross sectional study conducted by Gultie, Hailu & Workineh, (2014). They found that the school teachers were the primary source of information for high school students regarding menstrual hygiene which lead to increase the level of their knowledge regarding menstrual hygiene.

Concerning the visual challenges school-girls' knowledge regarding menstruation

The current study finding revealed that most visually challenges adolescent school-girls had lack of correct knowledge regarding reproductive organs and menstruation physiology, menstrual hygiene and management of minor alignments during menstruation before providence of the structured audio-educational sessions. While after the providence of the audio-educational sessions, there were enhancement in the participants' knowledge with highly statistical significant differences $P \leq 0.001$ (Table 5). This study findings may be attributed to that pre intervention, the source of information for majority of the current study was the mother and there was a little attention from the teachers to fill in the adolescent school-girls' needs regarding menstruation. In addition, menstruation is considered a sensitive topic and not all mothers are properly prepared to transfer correct knowledge to their daughters especially with the low educational level and low socio-economic status of our target and their special needs as disabling people. While after the providence of the structured audio-educational sessions which were properly prepared in a simple Arabic language and after providence of the supportive material which was the educational booklet that made in braille method and validated by a panel of experts in the maternity nursing, community nursing and obstetric medicine, which had the great effect on enhancement of the participants' knowledge regarding menstruation.

These study findings are similar to an experimental study conducted by *Kamaljit et al., (2014)* who reported that most of the participants had poor knowledge during pre-test. Nevertheless, after planned teaching program session most of the participants had good knowledge. Also another supportive study conducted by *Krishna Kumari Samantaray et al., (2017)* who found significant differences between pre-test and post-test of knowledge between 40 visually impaired adolescent girls regarding personal hygiene. In addition to another study done in India on 300 student that found a statistically significant improvement in knowledge scores in various aspects of reproductive health *Vanusha & Parvathavarthini, (2018)* following periodic health education intervention program.

Contradicting to the current study findings, a joint research method conducted by *Tegegne & Sisay (2014)* on 595 randomly selected adolescent school girls in Northeast Ethiopia to find out school-girls menstrual hygiene knowledge, they found that more than half of the participants had correct knowledge regarding menstruation and management of its minor alignments.

Thus, the first study hypothesis "visually challenges adolescent schoolgirls who receive audio educational sessions exhibit improvement in knowledge regarding menstruation post implementation of the educational sessions than before" was accepted.

Concerning the visual challenges school-girls' practices regarding menstruation

The current study finding revealed that most visually challenges adolescent school-girls poor practices regarding menstrual hygiene and management of its minor alignments before providence of the structured audio-educational sessions regarding menstruation comparing to after the providence of the structured audio-educational sessions with highly statistical significant differences $P \leq 0.001$ (Table 5).

This study finding is parallel to an Egyptian experimental study conducted by *Ali & Abd-El Aal*, (2015) on 71 blind adolescent school-girls in in El-Nor and El-Aml institution to investigate the effect of health educational program regarding reproductive health among blind adolescence. They found that there were improvement in the students' practices regarding personal hygiene, exercise and reproductive health after the program than before with highly statistical significant differences.

Thus, the second study hypothesis "visually challenges adolescent schoolgirls who receive audio educational sessions exhibit improvement in practices regarding menstruation post implementation of the educational sessions than before" was accepted.

Regarding the visual challenges school-girls' satisfaction' score with the audio-structured educational sessions regarding menstruation

The current study denotes that majority of the visually challenges adolescent girls were satisfied with the overall sessions, the structure of the sessions and the covered content and the explanation of the educational sessions by the researchers. This study finding is on line with the study done by *Jeyanthi* (2017) who found that the level of satisfaction with audio drama regarding menstrual hygiene and management of its minor ailments showed that 80% were satisfied and 20% were highly satisfied with the researcher and audio drama on menstruation and management of its minor ailments of among visually challenged girls.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion: the audio educational sessions were effective in enhancement of the visually challenges school-girls' adolescent knowledge and practices regarding menstruation.

Recommendations:

1. Raising awareness of school-girls adolescents regarding menstruation by further educational programs especially for girls with disabilities.
2. Integrating the menstruation, menstrual hygiene and management of its alignment into the special needs for the visually challenges school-girls in the blind schools objectives.

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