A STUDY TO ASSESS THE KNOWLEDGE REGARDING Mhealth AMONG ADOLESCENT GIRLS AT BHUCHO MANDI COMMUNITY, BATHINDA

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Abstract : This study has been undertaken to assess the knowledge regarding mhealth among 60 adolescent girls at Bhucho Mandi community. A descriptive study design was used. A self-administrative survey including demographics and Checklist was used to collect data regarding mHealth. The findings revealed the majority of the adolescent girls were between 13-19 years of age. Out of 60 Adolescent girls, 01 (1.66%) adolescent girl have inadequate knowledge on mHealth, about 48 (80%) adolescent girls have moderately adequate knowledge on mHealth and 11 (18.33%) adolescent girls have adequate knowledge regarding mHealth. On the whole, adolescent girls have moderately adequate knowledge on mHealth (mean=13.44, SD=3.28). The results provided valuable information regarding need for mHealth among adolescent girls. mHealth awareness has not reached the desired level. The study indicates the need for creating awareness among Community regarding mHealth Services.

IndexTerms **- mHealth, knowledge, adolescent girls, urban community**

I. INTRODUCTION

"Be He@lthy, Be Mobile"

The lifestyle of adolescent poses a serious public health challenge. Adolescent and student tend to have low level of physical activity and eat unhealthy food. In addition, the prevalence of overweight and obesity within this group increased in many countries.[1]

mHealth is short for Mobile Health. mHealth describes programs that promote healthier lifestyles by communicating through Short Message Service (SMS), Multimedia Messaging Service (MMS), Interactive Voice Response (IVR), Voice communication/Audio clips, Video clips, Images, social networking, and mobile device applications. Through mHealth, health educators and health care providers can reach people outside of a doctor's office or education setting. The goal of mHealth is to bring health education into a person's day-to-day routine as a means of increasing the efficacy of health interventions. mHealth also makes it possible to increase health education access to low-income populations because, through these modalities, health education can be delivered right to their phone.

The World Health Organization defines mobile health as "medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices". new approach has several key advantages.[2]

Mobile apps seem to be promising tools which help to improve their health. Apps are software applications that enable programme to run on smart phones. Because smart phone can be used anywhere and at any time, they can potentially reach many people and can offer good opportunity that can contribute to health promotion and health protection. They can particularly beneficial in reaching adolescents. An interesting question is whether apps can be applied in health promotion for adolescents. The adolescent skip breakfast and consume increase amount of soft drinks and less amounts of fruits especially between age 11 and 15 years. Adolescents in India constituting more than 1/5 of the total Population, are living in a new age and growing under the multiple influences of family, school, market and media.[1]

According to international telecommunication union, there are now over 5 billion wireless subscriber, over 70% of them reside in low -and middle-income countries. Moving toward a more strategic approach to planning, development, and evaluation of mobile Health activities will greatly enhance the impact of mobile health increased guidance and information are needed to

help align mobile health with broader health priorities in countries and integrate mobile health into overall efforts to strengthen health system.[3]

One of the most promising new opportunities is afforded by the high penetration of mobile communications in India: the country now has over a billion mobile subscriptions. The delivery of healthcare services through mobile phones has increased worldwide over the past two decades and the global mobile phone revolution has inspired thousands of global health innovation projects.[4]

1.1 Need for the study:

Use of mobile phones by the adolescents in India is on the rise and research on the impact of information technology (including mobile phones) for improving healthy life style among adolescents is a priority research area. Adolescent and students tend to have low level of physical activity and eat unhealthy foods, and the prevalence of overweight and obesity has increased. Which poses a public health challenge. Mobile apps play an important role in their daily lives, suggesting there potential to be used in health-promoting strategies. Adolescents need to be treated as a distinct segment of our population and it is important to realize and address their health and lifestyle problems inadequate sleep, depression and smoking are the needing unhealthy behaviors among the respondents. Families can play an important role to help these adolescents live a healthier life. Further research studies should be carried out to high light issues of concern and there possible solutions in this population.[3]

The US Food and Drug Administration (USFDA), through the industry estimation, reported that, by 2015, 500 million smartphone users worldwide will use at least one mHealth app and by 2018, 50% of the smartphone and tablet users (3.4 billion) will download mHealth apps (USFDA 2014). Researchers also predicted that, mHealth apps will assist healthcare professionals, outside of the usual healthcare setting, to diagnose patients' suffering from potentially life-threating conditions.[5]

Recently, healthcare professionals and researchers have introduced more and more technological solutions into the healthcare system, particularly mobile Health (or mHealth). mHealth possesses the feasibility to support data collection and transferring at any time, thereby promoting more rapid convergence to optimal treatment.

mHealth is an integration of mobile technology's advantages in healthcare system (WHO, 2011). Mobile technology promotes healthcare services in the aspect of accessibility, effectiveness, and affordability. More specifically, mHealth offers accessible health services to patients, reducing geographic and temporal barriers between patients and the healthcare professionals. Successful experiments and implementations also prove that mHealth is an effective intervention. Additionally, the popularity of mobile devices found a ground base for the affordability of mHealth services, i.e. patients do not need to purchase additional devices. Recently, there is growing enthusiasm to capitalize on the research of mHealth to increase the nursing intervention on individual, communal, and global scales.[6]

Considering such incredible potential of mHealth apps, it is critical to understand whether a user poses necessary literacy skills to use mHealth apps. To the best of our knowledge, this thread of research is still unexplored. We believe Mobile and Smartphone (mHealth) technologies have the potential to improve knowledge of adolescent girls on health, mhealth will contribute to improve awareness about diseases and promoting healthy diets and active lifestyle of adolescent girls. We believe this research will make a major contribution to the field of health literacy. Our research will help to move the field of health literacy even further by integrating mHealth technology in it.

II. METHODOLOGY

2.1 Research approach: A quantitative research study was chosen to assess the knowledge of adolescent girls regarding mHealth.

2.2 Research design: Descriptive research design. (Non Experimental Descriptive Design) was chosen for the study

2.3 Research setting: The study was conducted at urban community of Bhucho Mandi, Bathinda, Punjab, India.

2.4 Variables under study:

2.4.1 Independent variable: In this study, assessing the level of knowledge regarding mhealth among adolescent girls.

2.4.2 Dependent variable: Socio demographic variables of adolescent girls is the dependent variable in this study.

2.5 Population:

2.5.1 Target Population: All adolescent girls of Bhucho Mandi.

2.5.2 Accessible Population: 60 adolescent girls of Bhucho Mandi.

2.6 Sample and sampling technique:

2.6.1 Sample: Adolescent girls of Bhucho Mandi.

2.6.2 Sampling technique: Non probability convenient sampling is used for the selection of subject.

2.6.3 Sample size: 60 adolescent girls (n=60).

2.7 Data collection procedures:

Data were collected in September 2018. The researcher approached the adolescent girls at their houses and explained the purpose of the study. An information sheet with the details of the study was also provided. Confidentiality and anonymity of the collected data were assured. Those who were willing to participate in the study were required to sign a consent form, fill in the questionnaire and then return it to the researcher immediately.

Description of the data collection tool:

In this study the data collection tools were consisted of 2 parts covering the following areas.

Part: I

Demographic data of adolescent girls included 8 items such as age, religion, type of family, education, income, using own mobile, using mobile and internet in family, number of heath app in phone.

Part: II

A self administrative closed ended questionnaires to assess the knowledge regarding mHealth.

A self administrative closed ended questionnaires consisting of 25 items on mHealth knowledge, which are checked by a researcher for their presence or absence.

Scoring:

There were total 25 items. Each item had 3 choices in nature. They are 'YES , 'NO'and 'NO INFORMATION'. The respondents were expected to choose any one choice out of two. Each adolescent girl for each item choosing 'Yes' was given a score of one, choosing 'No' score of zero, and 'No information' score of zero.

Method of data analysis:

Descriptive analysis:

1. Frequency and percentage analysis was used to describe the demographic characteristics of adolescent girls of Bhucho Mandi.
2. Mean, standard deviation, and mean score percent was used to assess the Level of Knowledge regarding mhealth among adolescent girls at Bhucho Mandi.

III. RESULTS

Frequency and percentage distribution of demographics variables of adolescent girls.

Table 1: distribution of respondents by socio demographic variables of adolescent girls (n=60)

Socio Demographic Variables	N	%
1. Age in Years		
a. 10-13 years.	06	10
b. 14-16 years	44	73.33
c. 17-19 years.	10	16.66
2. Religion		
a. Sikh	58	96.66
b. Hindu	02	3.33
3. Type of the Family		
a. Nuclear Family	28	46.66
b. Joint Family	32	53.33
4. Educational Status		
a. PUC	0	0
b. 10th Standard	0	0
c. Primary School	60	100
d. No formal Education	0	0
5. Economical status of the Family per month in Rs.		
a. Rs. 10,000 - 15,000	29	48
b. Rs. 15,000 - 20,000	16	26.66
c. Rs. 20,000 - 25,000	10	16.66
d. Rs. 25,000 - 30,000	05	8.68
6. Do you have own mobile?		
a. Yes	04	6.66
b. No	56	93.33
7. How many members in your family using mobile and internet?		

a. No one is using	02	3.33
b. 1-2	37	61.66
c. 2-4	16	26.66
d. 4-6	05	8.33
8. Do you have any health app in your mobile?		
a. Yes	08	13.33
b. No	52	86.66

With regard to their age, majority of the people were between 14-16 years of age 44 (73.33%), Considering their religion, majority of the people were Sikh 58 (96.66%), On the type of family, majority of them belong to joint family i.e about 32 (53.33%), With regard educational status, majority of adolescent girls completed Primary school 60 (100%), With regard to their Family Income, majority monthly Family Income is between Rs. 10,000-15,000. (48%), With regard "using own mobile", there are 4 adolescent girls having own mobile, remaining are using family members mobile (6.66%), With regard to "How many members in your family using mobile and internet?", about 96.66% of family members are using mobile and internet, With regard to "Do you have any health app in your mobile?" only 8(13.33%) adolescent girls using mobile health application in their mobile.

Table 2: distribution of respondents by the level of knowledge regarding mhealth among adolescent girls at bhuchu mandi community (n=60)

SL.NO.	LEVEL OF KNOWLEDGE	f	%	MEAN	SD
1	**Inadequate**	01	1.66		
2	**Moderately adequate**	48	80	17.03	10.05
3	**Adequate**	11	18.33		
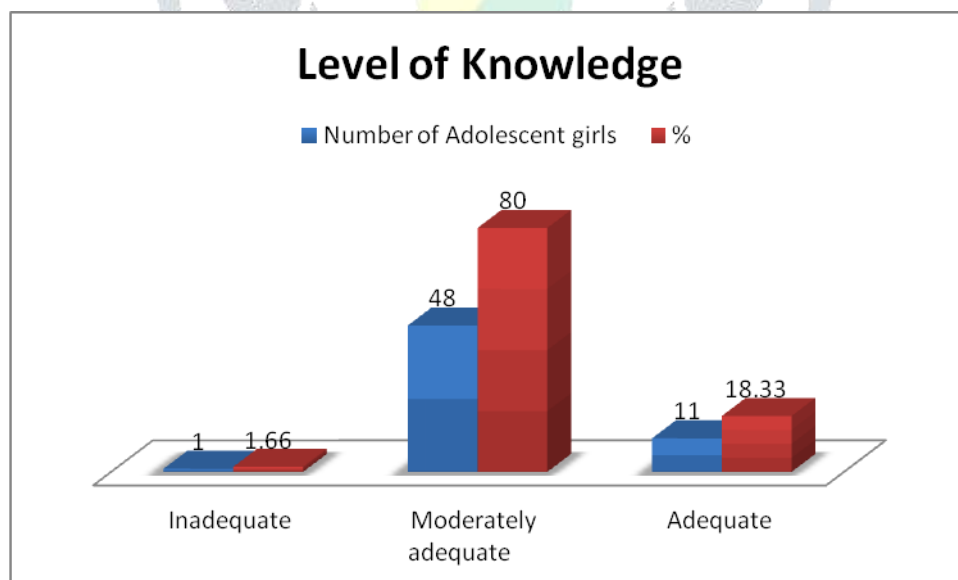
Fig: 1, distribution of respondents by the level of knowledge regarding mhealth

Out of 60 Adolescent girls, 01 (1.66%) adolescent girl have inadequate knowledge on mHealth, about 48 (80%) adolescent girls have Moderately adequate knowledge and 11(18.33%) adolescent girls have adequate knowledge regarding mhealth.

Table 3 : the level of knowledge among adolescent of butcho mandi community with their selected demographic variable.

Socio Demographic Variables	INADEQUATE		MODERATELY ADEQUATE		ADEQUATE	
	N	%	N	%	N	%
1. Age in Years						
a. 10-13 years.			5	8.33	1	1.66
b. 14-16 years	1	1.66	34	56.66	10	16.66
c. 17-19 years.			8	13.33	1	1.66
2. Religion						
a. Sikh	1	1.66	47	78.33	10	16.66
b. Hindu					2	3.33
3. Type of the Family						
a. Nuclear Family			24	40	6	10
b. Joint Family	1	1.66	23	38.33	6	10
4. Educational Status						
a. PUC						
b. 10th Standard						
c. Primary School	1	1.66	48	80	11	18.33
d. No formal Education						
5. Economical status of the Family per month in Rs.						
a. Rs. 10,000 - 15,000	1	1.66	23	38.33	1	1.66
b. Rs. 15,000 - 20,000			11	18.33	4	6.66
c. Rs. 20,000 - 25,000			9	15	5	8.33
d. Rs. 25,000 - 30,000			4	6.66	2	3.33
6. Do you have own mobile?						
a. Yes			2	3.33	9	15
b. No	1	1.66	45	75	3	5
7. How many members in your family using mobile and internet?						
a. No one is using			2	3.33		
b. 1-2	1	1.66	30	50	6	10
c. 2-4			11	18.33	5	8.33
d. 4-6			4	6.66	1	1.66
8. Do you have any health app in your mobile?						
a. Yes			3	5	5	8.33
b. No	1	1.66	44	73.33	7	11.6

Table 3, shows the level of knowledge among adolescent girls at Butcho Mandi Community with their selected demographic variable.

With regard to their age, majority of the adolescent girls between 14-16 years of age have moderately adequate knowledge regarding mhealth i.e 34 adolescent girls (56.66%), Considering their religion, majority of the adolescent girls from Sikh religion have moderately adequate knowledge regarding mhealth, i.e 47 (78.33%), With regard to the type of family, about 23 (38.33%) adolescent girls have moderately adequate knowledge regarding mhealth, With regard educational status, 48 (80%) adolescent girls completed Primary school have moderately adequate knowledge regarding mhealth, With regard to their Family Income, 23 adolescent girls of 10,000 – 15,000/- family income and 11 adolescent girls with 15,000 – 20,000/- family income have moderately adequate knowledge regarding mhealth.With regard "using own mobile", there are 9 adolescent girls having own mobile, have adequate knowledge regarding mhealth.With regard to "How many members in your family using mobile and internet?" about 6 adolescent girls family members using mobile and internet have adequate knowledge regarding mhealth.With regard to "Do you have any health app in your mobile?" only 5 (8.33%) adolescent girls using mobile health application in their mobile have adequate knowledge regarding mhealth.

These findings were supported by a research study conducted by **Slawa Rokicki and Gunther Fink** to assess the reach and effectiveness of mHealth on text-messaging intervention on adolescent sexual and reproductive health (SRH) to assess the degree to which mHealth programs reach target adolescent who may be at higher risk of poor SRH outcomes. The study was conducted among girls aged 14-24 in secondary schools in Accra, Ghana. The mHealth intervention was an interactive mobile phone quiz. They used detailed data on individual's level of engagement with the program, SRH knowledge scores to assess the extent to which engagement and program impact vary across parental education, SRH knowledge deficit and parental support. 81% of participants engaged with the mHealth program, the programme was effective at increasing knowledge of SRH across all strata. Higher levels of engagement were associated with higher knowledge scores up to year later. The study was concluded that mHealth programs for adolescents have the potential to engage and increase SRH knowledge of adolescent girls across sociodemographic strata.[7]

The findings revealed that the majority of the adolescent girls were between 13-19 years of age. Out of 60 Adolescent girls, 01 (1.66%) adolescent girl have inadequate knowledge on mHealth, about 48 (80%) adolescent girls have moderately adequate knowledge on mHealth and 11 (18.33%) adolescent girls have adequate knowledge regarding mHealth. On the whole, adolescent girls have moderately adequate knowledge on mHealth (mean=13.44, SD=3.28). The results provided valuable information for community health nursing educators in identifying adolescent girls needs and facilitating for improvement of knowledge regarding mhealth. The level of knowledge regarding mhealth has not reached the desired level. The study indicates the need for creating awareness among Community regarding mHealth is essential. Further study is needed on improving community participation to improve the knowledge regarding mhealth.

IV. IMPLICATIONS OF THE STUDY:

The findings of the study have implications for Nursing Education, Nursing Practice, Nursing Research and Nursing administration.

The findings of this study have scope in the following areas:

Nursing Education:
- Community Health Nurse, Community health educators should aim at a better understanding of the mobile health.
- In order to increase adolescent girls knowledge, educators should include the material from simple to complex, assess the adolescent girls knowledge by interaction, and encourage residents to utilize mhealth services.
- Guidance and support should be provided to adolescent girls, where positive reinforcement might encourage adolescent girls to use mhealth services.
- Constructive feedback should be provided to adolescent girls to ensure future improvement.
- They need to be aware of the importance of mhealth survices. Being optimistic and having positive values, with adequate social support, might also help them deal with utilization of selected mhealth services more effectively.

Nursing Practice:
- Health centre staff can develop rapport with adolescent girls utilising mhealth services.
- Community health educators or mentors can create a supportive climate for the adolescent girls, who are seeking mhealth knowledge.
- Provide guidance for those who are inexperienced in using the mhealth services with multiple health problems; and give constructive feedback on their performance.
- A supportive learning environment is important in motivating adolescent girls learning and increasing use of mobile for health services.
- The results of the study may also help community educators to identify adolescent girls who perceive poor knowledge on mhealth. Then appropriate and effective strategies can be planned and implemented.
- Community educators should give support and guidance to adolescent girls who have inadequate knowledge on mhealth.

Nursing Administration:
- In order to improve mhealth knowledge, good communication and social skills are needed. Effective communication skills can also increase adolescent girls self-confidence in gaining knowledge regarding mhealth.
- The study assists the nursing administrative authorities to initiate and carry out Guidance and counseling in health care settings regarding mhealth.

Nursing Research:
- Poor knowledge on mhealth emphasizes the need for further research including the socio-demographic variables that could have an influence in better knowledge regarding mhealth.
- The study helps the investigators to develop insight about knowledge regarding mhealth by adolescent girls.
- This study will serve as a valuable reference material for future investigators.
- Research studies can be conducted including all the three domains i.e. knowledge, attitude and practice.
- Large scale studies can be conducted.

V. RECOMMENDATIONS
- ❖ A comparative study can be conducted to assess the knowledge regarding mhealth between urban and rural community.
- ❖ A similar study can be under taken on large scale.
- ❖ An experimental study can be conducted to evaluate the effectiveness of mhealth on various health and disease aspects.
- ❖ Research studies can be conducted including all the three domains i.e. knowledge, attitude and practice.

VI. BIBLIOGRAPHIC REFERENCES

1. Denise Jantine Dute, Wanda Jose Erika Bemelmans, João Breda. "Using Mobile Apps to Promote a Healthy Lifestyle Among Adolescents and Students: A Review of the Theoretical Basis and Lessons Learned" [online]. 2016 [cited 2018 July 4] Available from: URL: https://mhealth.jmir.org/2016/2/e39/

2. Korey Capozza, Sarah Woolsey, Mattias Georgsson, Jeff Black, Nelly Bello, Clare Lence: Going Mobile With Diabetes Support: A Randomized Study of a Text Message–Based Personalized Behavioral Intervention for Type 2 Diabetes Self-Care [Internet] [cited 2017 Nov 10]; Available from: http://spectrum.diabetesjournals.org/content/28/2/83?utm_source=TrendMD&utm_medium=cpc&utm_campaign=Diabetes_Spectr_TrendMD_1

3. Waris Qidwai, Sidra Ishaque, Sabeen Shah, Maheen rahim. "Adolescent Lifestyle and Behaviour: A Survey from a Developing Country" [online]. 2010 [cited 2018 July 6] Available from: URL: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2946339/

4. Overview of Diabetes Burden [Internet]. 2017 [cited 2017 Feb 15]. Available from: http://www.mdiabetes.nhp.gov.in/index.php)

5. Ahmed Shameem. mHealth Literacy: Characterizing People's Ability to Use Smartphone-based Health-related Applications [PhD thesis]. University of Illinois at Urbana; February 2015 [cited 2017 Feb 20]. Available from: http://people.ischool.illinois.edu/~ahmed9/pdf/DissertationProposal-ShameemAhmed.pdf

6. Azam, Shadi, Yang, Yan. Mobile Health Services for Patients with Chronic Diseases: A Systematic Literature Review (Nursing Bachelor's Thesis). Otaniemi: Laurea University of Applied Sciences; 2013

7. Rokicki Slawa, Fink Gunther. Assessing the reach and effectiveness of mHealth: eveidence from a reproductive health program for adolescent girls in Ghana. BMC Public Health. Avaialble from:https://doi.org/10.1186/s12889-017-4939-7.