

Supporting School Health in Disadvantaged Rural Areas in Bekaa and Southern Lebanon

**MODERN UNIVERSITY OF BUSINESS AND SCIENCE**



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## **Abstract**

School health promotion program is effective in helping students achieve health literacy, enhance their health-related behaviors, and thereby improving their health status. However, in resource-limited countries, such programs are very limited to some sporadic initiatives. The aim of this project is to pilot the school health program designed and implemented by the World Health Organization (WHO) in collaboration with the Modern University for Business and Science (MUBS) in five public schools located in rural areas in South and Bekaa, Lebanon. This project tackled three main components: medical screening, health education, and school health environment. An evaluation of the project was conducted through questionnaires distributed among students and parents, testing of software of medical records, as well as recommendations given to schools administration to enhance the physical environment of the school. The outcomes of the project showed the effectiveness of such programs in the development of the schools' health. This project should be applied at the national level to provide children and their parents with healthy learning environment that promotes health at all levels.

## **Background**

Many low socio-economic children are attending schools that lack interest in teaching healthy behaviors within their programs. Whereas school is the optimal place to promote positive behaviors (Winters et al, 2007).

School-based education must be inclusive, integrative, and provides training for teachers; in addition to, family involvement and community support (Gold, 1990). According to Glanz et al (2008), "Health education prevents diseases and promotes healthy lifestyle to detect illness to

treatment, cure and long-term care”. Schools can intervene on different levels; educating students during classroom lessons about nutrition and physical activity is very feasible. Also, schools administration can interfere in the type of meals that a child can bring or buy from the schools’ cafeteria. Increasing the number of hours of physical exercises, as well as connecting with parents and community members is very crucial for schools’ health development (Bourdeaudhuij, I, 2011).

Therefore, health education programs were proven to be more successful in changing health behaviors if the program is extended from kindergarten to grade 12 (Kolbe, 1993). Health promoting programs must be available in a wide spectrum of topics and throughout developmental stages. For instance, Sallis et al. (1997) found that including physical education programs in schools’ curriculum showed significant health benefits.

According to the World Health Organization (WHO), a “health-promoting school” can provide added value to the school’s setting. Such programs enhance students’ ability to make healthy decisions, improve ability to be in control of challenging situations in life, enhance capacities for peace, shelter, education, food, increase income, maintain a stable ecosystem, equity, social justice, sustainable development, and prevent leading causes of death, disease, and disability.

A health-promoting school does not only address health promotion and physical activity of the students but also involves families and community members in a collaborative and integrative way to improve health, which requires the involvement and participation of the community members and parents in enhancing such programs (WHO, 2007). For instance, parents should be involved in conducting activities and seminars targeting both parents and

students regarding adopting healthy behaviors. Parents play a significant role in shaping a child's physical activity behavior because children and adolescents are more likely to be physically active if their parents are active as well (Zecevic, et al., 2010).

Many interventions have been implemented in several countries addressing school health programs. For instance, in 2004 Catholic Relief Services (CRS) and Ghana worked on the School Health Education Program (SHEP) which aims to ensure a safe school environment that encourages children's participation and success in education (Ghana & CRS, 2009). A study performed in two elementary schools in an unprivileged areas in the United Kingdom showed that multicolored playgrounds have a beneficial effect on children and in increasing the hours of physical activity. Also, another study was held among American students aims at combining the school's social and physical environment with health education in curriculum, as well as with families and community to involve them in the decision making process. (Morton, et al., 2016).

The United Nations Millennium Development Goal "ensured that by 2015, all of the children will be able to complete a full course of primary schooling"; however, this goal was not met due to many factors. Inadequate water and sanitation facilities in the school environment have been reported as a major hindrance toward the achievement of this goal. The school's environment represents an important setting to promote healthy and safe learning environment; thus contributing to less illnesses and more productivity (Mathekgana, et al, 2001; Haines, et al 2000).Therefore, WHO worked on designing a school health program targeting both physical environments as well as educational and health related issues.

The World Health Organization has designed an e- learning program that targets four public health issues: road safety, dangers of smoking, reproductive health/ STIs, and physical

activity. These e-modules have been adapted and contextualized to target students between the age of 10 and 15 in Lebanese schools. Such modules help students learn in an interactive method using computers. These e-learning programs were part of the national school health strategy that was developed by the Ministries of Education and Public Health in coordination with WHO. The main components of this national strategy are: medical screening, health education and school health environment.

According to WHO (2018), unhealthy diets and physical inactivity are among the leading causes of the major non - communicable diseases such as cardiovascular disease, type 2 diabetes and certain types of cancer which contribute to death and disability. Therefore, WHO has formulated e-learning topics related to nutrition and sports to encourage and help maintain a healthy diet and active lifestyles among the new generation.

As for the reproductive part, WHO's main target is to reduce sexual risk for HIV by spreading awareness in schools. This intervention aims at generating HIV-related knowledge among students to decrease sexual risk behaviors (Fonner, V. A. et al, 2014).

The second e-module focuses on the dangers of smoking in which tobacco use is a major cause of premature death, several general diseases (WHO, 2003) and a leading cause of morbidity worldwide (Lydon, D.M et al, 2014). School-based interventions aimed either at prevention or cessation ,so they grab the audience attention to take the measures and work on this issue (Thomas, R. E et al 2013).A federal mandate dictates that all schools have a drug education program (Wiehe, S. E. et al, 2005).

Sudden cardiac death is another issue to be tackled especially in young athletes which is unexpected, tragic, and usually caused by cardiovascular disease. WHO has updated the school

health medical guidebook in 2015 to include a section on cardiac screening as pre-participation exam of young athletes in schools .The Houston Early Age Risk Testing and Screening (HEARTS) study was conducted on students that were screened at their schools for cardiac abnormalities for 12-year-old athletic and non-athletic school children. The results showed that 40.6% were subjected with abnormalities on history and physical exam, 19.7% with hypertension, 31.5% with electrocardiographic abnormalities, and 13.0% with echocardiography abnormalities (Berman. H, 2015).

It is estimated that 1.2 million adolescents died in 2015, over 3000 every day, mostly from preventable or treatable causes. Road traffic injuries were the leading cause of deaths in 2015 (WHO, 2015). However, the school, families and community members must establish a traffic free zone outside the school at critical hours to protect the students (WHO, 2002).

Moreover, school's physical environment is another aspect of school's health. For instance, WASH interventions improve the overall sanitation, hygiene and daily water intake. Many children spend time absent from schools due to diseases spread within the school's environment. Water and sanitation in schools are considered the main causes of respiratory and gastrointestinal diseases leading to the death of children globally (WHO, 2012). Since the school environment is an important sector to explore, the World Health Organization (2009) issued guidelines for water, sanitation, and hygiene implementation in schools to reduce diseases related to hygiene.

In Lebanon, the World Health Organization in collaboration with the Ministry of Health and the Ministry of Education conducted the Global School-based Student Health Survey in

2005, for school children in grades 7, 8 and 9 to evaluate the health risk behaviors. The results showed the following (a) Fifteen percent of students are at risk for becoming overweight; (b) almost 50% of students were supportive while discussing attitudes towards sexual and reproductive health education, (c) 20% of students had never heard of HIV/AIDS, (d) 40% of students were physically attacked by a parent, and 25% by a teacher; (e) 50% have been in a physical fight one or more times in the last year. About 4 in 10 students reported that their parents never or rarely knew about what they were doing in their free time in the last month (Jabbour, 2013).

On the other hand, the Global School-based Student Health Survey (2005) found weaknesses in the Lebanese health curriculum and recommended to include new curriculum objectives. Although the Ministry of Education in Lebanon obliges all the Lebanese schools to conduct students' annual medical screening, still not all the components of school's health program have been implemented. Therefore, the World Health Organization aims at supporting school health programs to ensure the protection and promotion of physical, mental, psychological and social health of school-aged children and by involving parents and community members in promoting students wellbeing.

### **Objectives of the study:**

#### **A-General Objective:**

The aim of this study is to pilot an intervention targeting the three components of the school health program in five schools located in rural areas in the South and the Bekaa regions.

**B-Specific Objectives:**

1-To ensure a healthy environment for the protection and promotion of physical, mental, psychological and social health of Lebanese and Syrian students in public schools.

2-To improve the health status of students in disadvantaged rural areas in the Bekaa and the South of Lebanon.

3- To involve parents and community members in promoting students' wellbeing.

**Methodology****A. Study Area / Setting:**

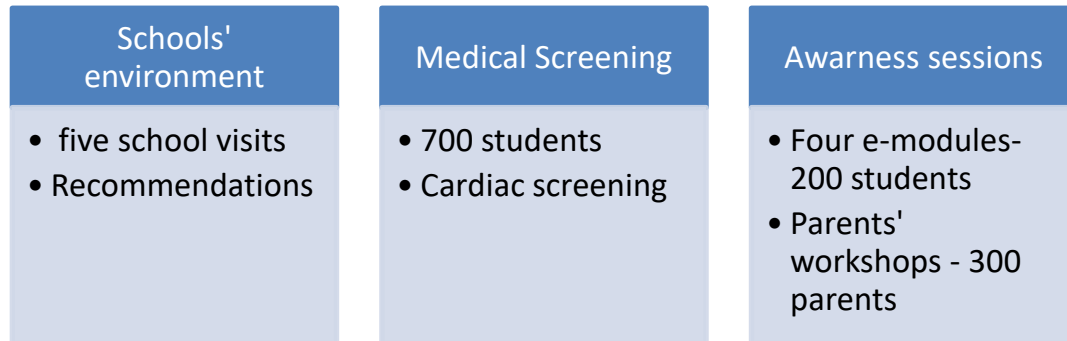
The study focuses on five public schools in rural areas in Bekaa and Southern Lebanon in the year 2019. An approval from the Ministry of Education and Higher Education (MEHE) was taken to conduct the intervention in the public schools.

**B. Sampling:**

Our study groups are primary schools' females and males students (age range between 10-15years) enrolled in five public schools in the Bekaa and the South of Lebanon and their parents as well.



### C. Intervention Design:



*Figure 1: Intervention Components*

The intervention was divided into three pillars:

a- Schools' environment: a specialist in schools' environment has met the schools' directors and social workers to explain the assessment tool that measures the dimensions of schools environment. Three weeks later, the specialist visited the schools to check the availability of these dimensions and to put a recommendation plan accordingly.

b- Medical screening: To maintain the sustainability of this pilot intervention, the schools' physicians were trained to conduct the appropriate medical screening in the schools. Moreover, a cardiac screening was conducted in each school to all students aged 12 and above. During the medical test, MOPH software was used to pilot the test in order to computerize the data.

c- Awareness: Students have acquired knowledge about reproductive health, physical activity, anti-smoking and road safety by using e-modules, guided by well trained teachers. These teachers were trained on how to deliver the content of the e-modules to be a student-centered learning approach. In addition, students' parents participated in a workshop related to communication skills between parents and children as well as physical activities and eating habits.

#### **D. Monitoring and evaluating the pilot intervention:**

A questionnaire was distributed to students at the baseline and after the implementation of the intervention to measure any increase in students' knowledge regarding the e-modules topics. Also, a questionnaire was distributed to parents at the baseline and after the workshops to measure any increase in their knowledge, positive attitudes and skills towards dealing with their children and promoting their wellbeing.

#### **E. Ethics:**

Ethical considerations permeated our entire research process. Before implementing the intervention, an approval from the Ministry of Education and Higher Education was taken to have access to public schools, as well as an approval from the principals of each school and consent from parents in order to have medical screening for their children.

#### **F. Analysis:**

Data of the questionnaires (parents and students) were analyzed by using SPSS version 21. T-test was used to compare results before and after the intervention. As for schools'

environment and MOPH tools, a feedback was taken from the stakeholders who were in charge of these activities.

### **G. Limitations**

Some public schools lack the capacity and resources needed to implement the three components of the schools' health program. Two schools didn't have computers to implement the e-modules, so they were invited to the university, noting that this might affect the sustainability of the project. Some schools showed concerns for exposing students to sensitive topics such as reproductive health. However, they decided to participate.

### **H. Results**

#### **Demographics:**

The E-Modules targets 45% male students and 55% female students enrolled in cycles 2 and 3 in public schools. As for the parents' workshop, 88% were females and 22% were males.

#### **E-Modules Results:**

Results showed a significant increase in students' knowledge in the topics of smoking, physical activity, reproductive health with P value <0.05; physical activity ( Mpre= 0.77 and Mpost= 0.89; SDpre 0.42 and SDpost= 0.30), smoking (M pre= 0.38 and M post 0.85 ; SDpre= 0.48 and SD post= 0.35, Reproductive health (Mpre= 0.02 and Mpost= 0.88; SDpre= 0.17 and SDpost= 0.04) while the results show a non-significant increase in Road safety knowledge ( Mpre= 0.95 and Mpost=0.97; SDpre= 0.20, SDpost=0.14).

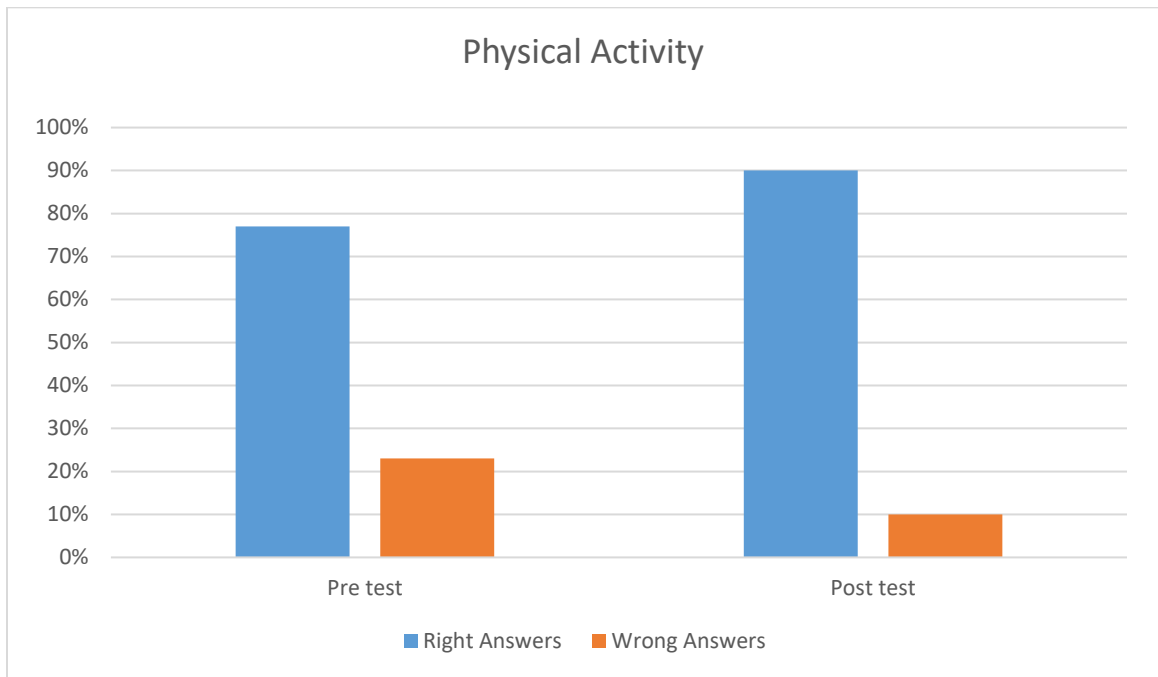


Figure 2: Physical activity pre-post test

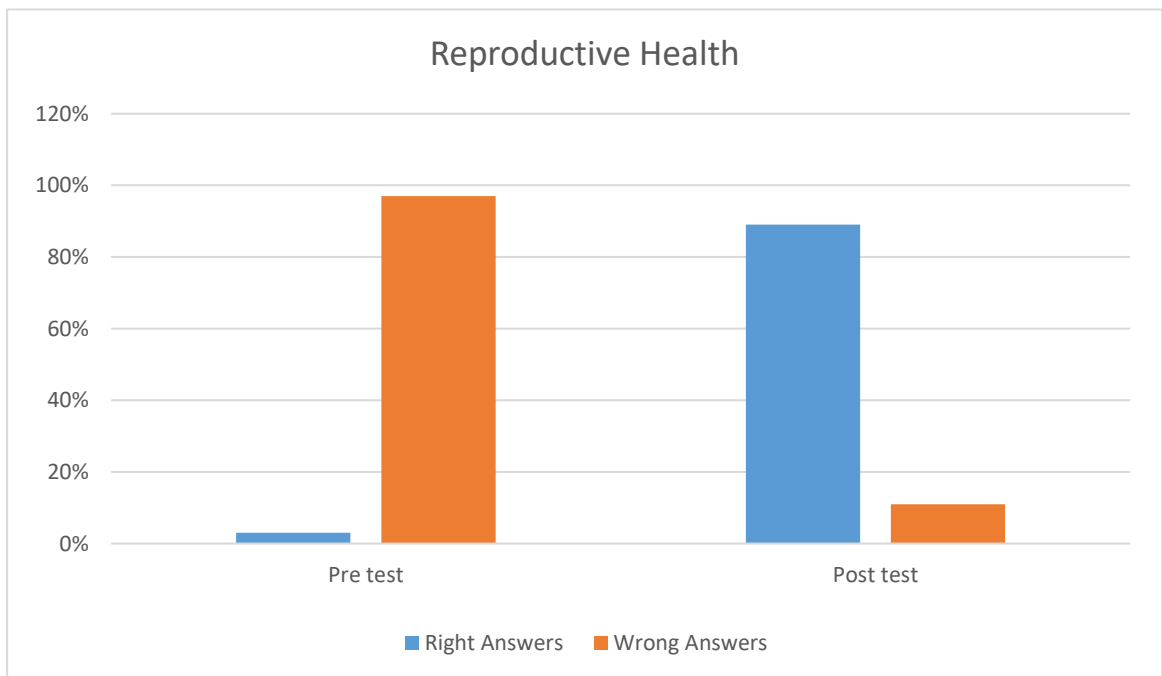


Figure 3: Reproductive health pre-post test

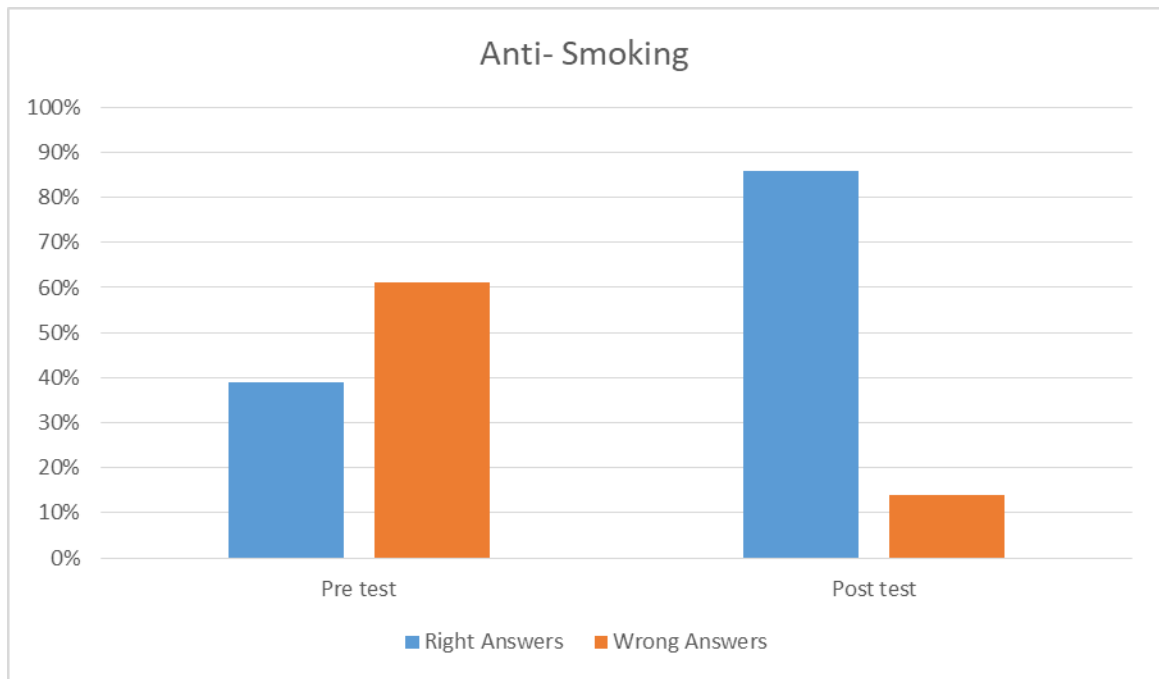


Figure 4: Anti-smoking pre-post test

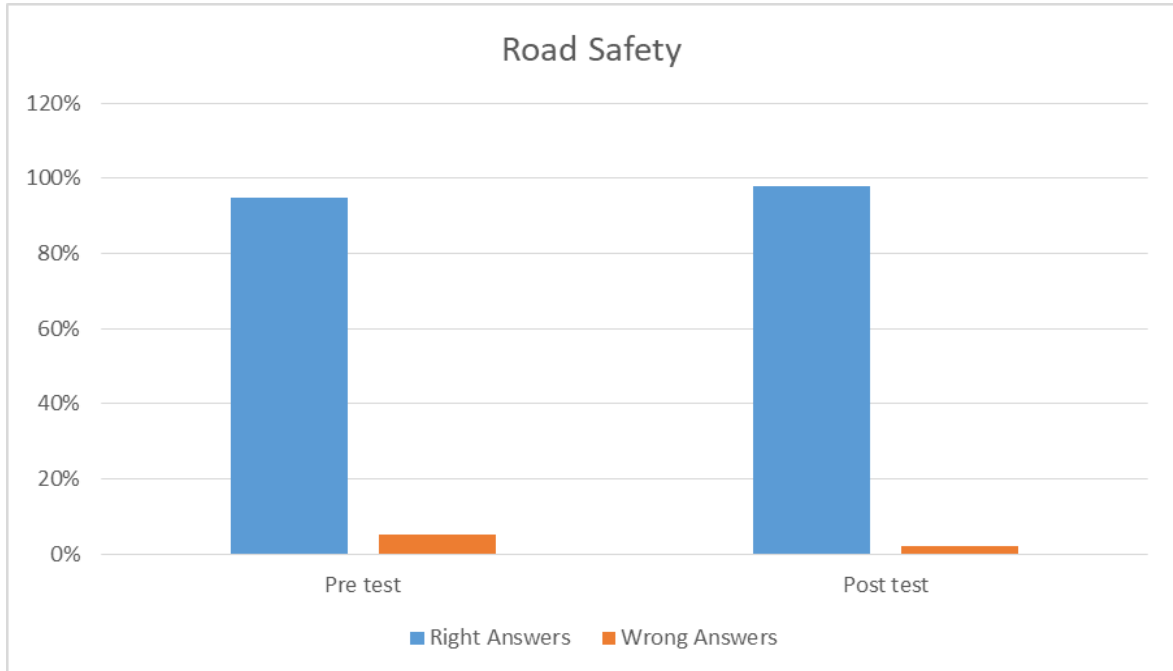


Figure 5: Road safety pre-post test

**Parents' workshop:**

The results showed a significant increase ( $p$  value  $<0.05$ ) in the knowledge of parents after attending the awareness sessions regarding communications skills from 56% to 76% ( $M_{pre} = 0.5$  and  $M_{post} = 0.60$ ;  $SD_{pre} = 0.28$  and  $SD_{post} = 0.22$ ) and a non-significant increase in the knowledge related to healthy lifestyles (eating and physical activities behaviors) 64% to 78% ( $M_{pre} = 0.54$  and  $M_{post} = 0.68$ ,  $SD_{pre} = 0.27$  and  $SD_{post} = 0.26$ ).

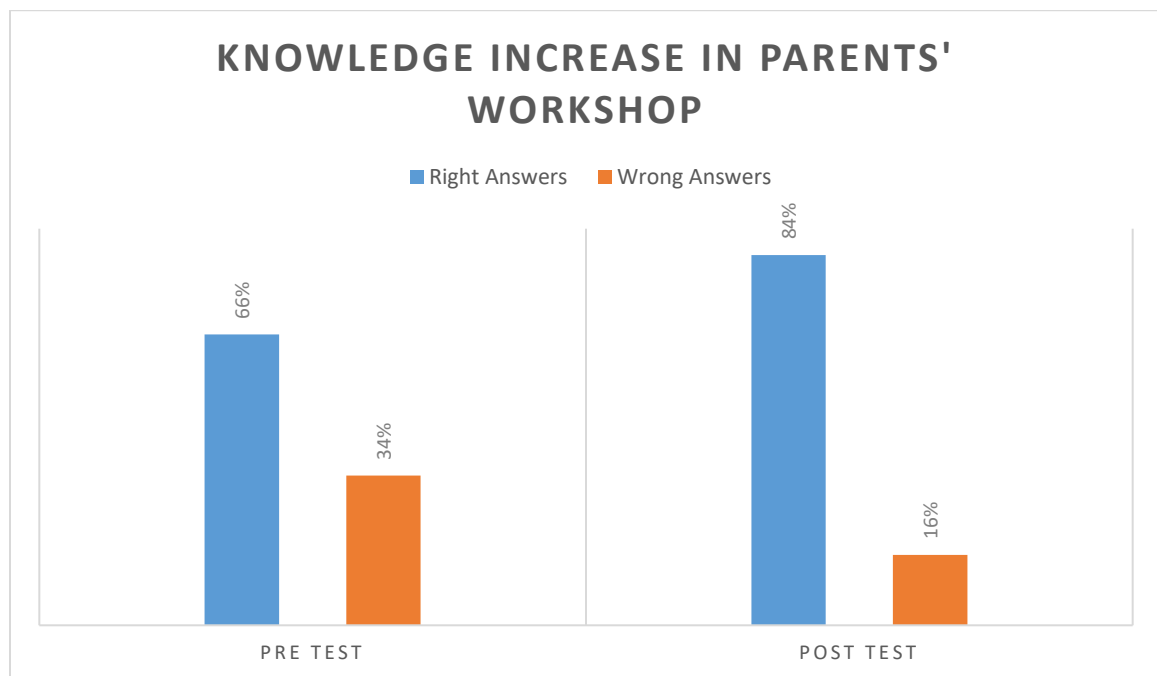


Figure 6: Parents knowledge pre-post test

**MOPH software tool:**

After entering the data to the system, which makes it more accurate and well visible, the computerized system offered by the World Health Organization (WHO) has been evaluated based on advantages and disadvantages.

a- More Space and Accessibility:

Computerizing the paper system can create additional space in the school, as there is no longer a need to store a large volume of medical records or files in the drawers and closets. Moreover, some schools are losing some folders because of the lack of the organization. Also, it is accessible to everywhere at any time.

b- Legibility and Accuracy:

Over time, paper documents can become smudged, faded or damaged, making the information hard to be read or retrieved. It is easily used.

c- Speed and Efficiency:

This computerized system saves more time not only in data entry but also in finding or searching for medical files of any students in any school in Lebanon. The user can often find what's needed with just a few keystrokes or mouse clicks. The average time needed to fill in each medical file is 10 minutes.

d- Protecting the environment:

For environmentally conscious organizations, the medical computerizing system paper files is one more way to "go green," as the need for less paper can help preserve trees. The advantage of this computerized system has r the need for paper consumption, where medical data can be easily conducted electronically. So, it is environmental friendly approach (eco-friendly).

e- Ability of editing

While the disadvantages are few:

- i. Data Entry Errors: wrong information can be entered.
- ii. Potential Loss of Physical Copies.

- iii. Requires High Internet Connection

**Physical environment recommendations:**

After visiting five schools, some recommendations were circulated among the school directors to enhance the schools environment which are mentioned in the table below:

<p><i>Sports should be considered as a very important session, if there is a gap in finding a sports teacher, other teachers should find ways and activities to prevent the sedentary lifestyle among their students. Physical activities affect the mental, physical and psychological well-being of the students.</i></p>
<p><i>Students do not know their rights and duties, a chart explaining the human rights should be hanged in each classroom. Also, awareness about children's rights should not be only included in the sessions of "Civic Education" subject, all teachers should emphasize on it throughout all their lessons.</i></p>
<p><i>Teachers should attend workshops on how to detect and deal with special needs students or students who are facing learning problems. Teachers who are attending these sessions should add the certificate of participation into his/her portfolio in the school. Moreover, each teacher attending a mental health workshop should disseminate the outcomes and the best practices with his/her colleagues to benefit from them and benefit all the students in the school.</i></p>
<p><i>All activities and action plans should be documented in the schools with the attendance sheet, date of activity, purpose, the target audience (parents, students, teachers, municipality, etc.), photos, videos, and costs.</i></p>



*Any action plan cannot be considered as a plan without having an evaluation section that measures the impact of the project on the students, teachers and parents.*

*An action plan for the medical screening should be well written including the costs needed (physician fees is a part of it, but also adding to it the maintenance of the equipment and the room is very crucial). A medical technician or a nurse should be asked to check the validity and sensitivity of the machines and equipment used after the completion of the yearly medical screening.*

*Washing program: An evaluation through observations and questions should be designed in all schools to assess the increase in the number of students who are washing their hands properly.*

## **Discussion:**

Teachers' knowledge is critical in determining the success of the school health program in disseminating the outcomes and the best practices with the students in the school. In our study, teachers were trained for evaluating the knowledge based on pre and post questionnaires distributed to the students at the baseline and after the intervention to measure the increase in their reproductive health, road safety, anti-smoking and physical activity. Similar to a study done in Ibadan, Nigeria which assessed the awareness and knowledge of teachers showed that good teachers' knowledge regarding school health program is being significantly associated with students' wellbeing (Taiwo A Obembe, 2016).

Our study showed an alignment with the intervention done at Ponferrada, in Northwest Spain which included sessions conducted to undergraduate students in watching a short internet

video about e-cigarette and tobacco product. This intervention had had a positive impact on the attitudes, knowledge and beliefs of the students (Molina, A. J et al,2012). In our study, the results showed at the beginning of the study the level of knowledge was already good but significantly.

The program entitled “For a Better Tomorrow” was conducted in urban Tanzania in South Africa to evaluate adolescents' knowledge, attitude, and behavior about reproductive health. An awareness program was held in, where data were collected from students aged 11 to 16 by using a picture drama, reproductive health materials and group discussion. The results showed that the reproductive health program, for both girls and boys, improved the students' knowledge and behavior about sexuality and decision-making after the program (Madeni , F et al , 2011).The study showed the same effectiveness as our study in which the knowledge increased significantly in the post-test .

While the results of the road safety knowledge showed a non-significant increase in our study, a study conducted in Scotland showed effectiveness in increasing children’s knowledge about road safety (Zeedyk, M. S et al, 2001).

A study was designed in Texas City Independent School District (TCISD) to examine its effect on student’s diet and physical activity. The Go for Health (GFH) program included a health education curriculum, orientation for physical activity and healthy lunch. A remarkable increase from baseline to post test in each school regarding dietary intake and physical activity was shown (Simons-Morton, B. G. et al, 1991).Similarly, the results of our study also showed a significant increase in students’ knowledge about physical activity. Therefore, such interventions proved to be effective in changing negative behaviors of students regarding food intake and physical activity.

Another evolving approach, which strengthens the delivery of e-modules, is to deliver health instruction using video, computer and internet technologies. Health instructional videos that supplement existing health curricula with primary grade children have been significantly correlated with improved cognitive achievement and student's interest towards health (Wilson DM, et al, 1997). For instance, thee-learning module Healthy Hearts 4 Kids (HH) is an example of the programs designed for children to be used at schools. It presents chapters on cardiovascular function, physical activity, nutrition and tobacco. Fifth and sixth grade classroom teachers implemented HH by taking their students to a computer lab for up to 50 minutes twice a week. Participants in this study included 233 fifth grade boys (n=103) and girls (n=130) from eight public schools in five West Virginia counties. Children who completed Healthy Hearts 4 Kids had improved their knowledge and positive attitudes towards the importance of physical activity (Palmer, S., et al, 2005).

Another interventional study was conducted in Egypt with a total number of 171 students participated in e-learning module covering the reproductive health section, with visual and interactive emphasis, to satisfy students' diverse learning styles. The first group received traditional lecturing, while the second volunteered to enroll in the e-learning course and take online course quizzes. Students participating in the e-learning course showed significantly better results than those receiving traditional tutoring. Thus, students using the designed e-course reported better learning (Abdelhai, R, et al 2012).

Furthermore, some of the physical environment recommendations given to the schools address the importance of environment and green spaces. A study conducted in Barcelona, Spain in the year of 2012–2013 for 36 primary schools to examine the relationship between green

spaces in school with physical and mental health, showed a beneficial association between exposure to green space and cognitive development among school children (Dadvand, P et al , 2015). Another study conducted in Nyanza Province, Kenya, from 2007 to 2008 demonstrated school based WASH program and found significant and substantial differences in WASH knowledge between intervention group and control group after the intervention. The knowledge of hand washing times and scores on the intervention significantly increased. Intervention schools, where no water supply improvement or soap was provided, significantly improved in consistent provision of drinking water, hand washing water and soap, as compared to control schools (Freeman, M. C., et al, 2011). Such intervention might be included in the Lebanese schools to increase the number of students who are washing their hands properly as a part of schools' health programs.

Parents' behavioral involvement enhances students' achievement (Pomerantz, Moorman and Litwack ,2007) because it fosters students' motivation and engagement in school. A study done in Ibadan, south-western Nigeria found out that 80% of respondents agreed that parents should be informed of the health needs of their children. While only few respondents, 39.3% knew that parents must pay visits to schools not only on parent-teacher association meeting days but throughout regular visits to the school (Taiwo A Obembe et al, 2016). The results of our study found that parent's workshop increased their knowledge regarding parents' involvement in students' school engagement and building strong bonds with their children.

As for the use of medical record system, MOPH, many advantages and disadvantages were noticed. Similar feedback was taken in China where they established an electronic health record-based general population-based cohort study called Chinese Electronic health Records

Research in Yinzhou (CHERRY) to save data resource for cardiovascular risk prediction and management for prevention of cardiovascular events. This system was used to facilitate healthcare services research (Lin, H. et al, 2018). However, internet access and lack of support were the most pressing challenges hindering its implementation (Mtebe J. S. et al, 2018).

Software is needed in the Lebanese schools to enter medical information for students in schools which is accurate and easily accessed; it saves more time in searching for medical files for any students.

However, the internet is considered as a main challenge. According to different articles, the computerized software tool can improve the quality of health records, be shared through different entities of the community and has a role in research through e-records. BARN (Body Awareness Resource Network) is a computer-based health system which was designed by a team of researchers in Madison. The evaluation was done on adolescents in two high schools (one urban and one rural) and three middle schools (two urban and one rural) public schools that provided students' grades 6-12 on different topics, such as AIDS, alcohol, body management, human sexuality, smoking and stress management. Users of BARN were more likely to remain free of risk-taking behaviors than non-users of BARN. Improvements in behaviors such as contraceptive use, stress reduction, cessation were associated by the use of this computerized system. Therefore, a computer-based system may be a powerful tool for the reduction of risk-taking behavior in adolescents (Bosworth, et al, 1994).

## **Recommendations & Conclusion:**

Improving and protecting the health and well-being of school-aged children and youth is a priority, especially that health practices and behaviors are learned in the childhood stage.

This project should be replicated in many schools to increase its impact in the Lebanese communities and results should be shared with the concerned ministries to set a plan for future steps.

Routine screening is needed for promoting health. Health education interventions such as comprehensive community education, culturally sensitive health promotion efforts, and improved access to low-cost screening sites are essential to improving rates of screening among these students.

Expanding the program to include infants would be a great step for the future. This will ensure a better result in students' wellbeing at an early stage. Additional research is needed to improve the effectiveness of such initiatives and to identify the most important characteristics of effective programs.

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