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RESEARCH ARTICLE

PEER TO PEER EDUCATION PROGRAM FOR PROMOTING PHYSICAL ACTIVITY AMONG FEMALE ADOLESCENTS IN TAIF, SAUDI ARABIA.

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Abstract

Background: Peer education is an interactive method of teaching or learning which is widely used for educating school students. Regular physical activity is linked to enhanced health and to reduced risk for all-cause mortality and the development of many chronic diseases in adults. However, many Saudi adult females are either sedentary or less physically active than recommended.

Objectives: To implement peer to peer education method in physical education among adolescent Saudi females and assess its effectiveness in changing their knowledge and bahaviours regarding physical activity.

Subjects and Methods: A randomized controlled trial, using peer to peer educational method was adopted. Two female school secondary schools were randomly selected. Two classes from each grade from the first school representing the intervention group (with peer to peer education), while three classes from each grade from the second school representing the control group. Self administer pre-designed questionnaire was adapted. Physical activity was assessed using IPAQ short-version. The questionnaire was administered twice before start the education program and one month after to an intervention group of students. The questionnaire divided into 3 main sections (demographic data, knowledge assessment, practice assessment).

Results: A total of 221 female students completed the questionnaire, representing 88.4% of the total female students invited to participate in the study (n=250). The age of the participants ranged between 16 and 18 years with a mean of 17.33±0.64. The general knowledge, regarding the importance of physical activity has been improved significantly after peer to peer education as it raised from 12±2.18 to 12.66±2.09 (P=0.048). The total physical activity score has been increased significantly after peer to peer education as it raised from 5558.4±5991.2 to 8046.8±7285.2 (P=0.012). While in the control group, without peer to peer education, there was no significant change in the total physical activity score. The majority of the participants recognized that physical activity is protective against diseases in general (88.2%) as well as it is protective against obesity (86.9%).

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Approximately 59.3% of them claimed that there were no any educational activities regarding physical activities at their schools while 10% reported that there were such activities either often or always.

Conclusion: Peer to peer education is an effective approach to increase and encourage physical activity among young people. The general knowledge, regarding the importance of physical activity has been improved significantly after peer to peer education.The prevalence of physical inactivity among Saudis secondary school females is relatively high. Such high prevalence of inactivity represents a major public health concern.

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Introduction:-

Background:-

Peer education is a popular concept that implies an approach, a communication channel, a methodology, a philosophy, and a strategy.

In the olden days of kings and queens (in England), peers were nobleman, aristocrats, lords, titled men and patricians. The English term “peer” refers to "one that is of equal standing with another; one belonging to the same societal group especially based on age, grade or status". In modern times, the term has come to mean fellow, equal, like, co-equal or match according to the dictionary of synonyms (Oxford Thesaurus). Recently the term is used in reference to education and training. Peer education is now viewed as an effective behavioral change strategy, and it draws on several well-known behavioral theories – Social Learning Theory, Theory of Reasoned Action and Diffusion of Innovation Theory.[(1)]

Theories of Peer Education in Brief **Social Learning Theory** asserts that people serve as models of human behavior, and some people (significant others) are capable of eliciting behavioral change in certain individuals, based on the individual's value and interpretation system (Bandura, 1986).

Theory of Reasoned Action states that one of the influential elements for behavioural change is an individual's perception of social norms or beliefs about what people, who are important to the individual, do or think about a particular behavior. (Fishbein and Ajzen, 1975).

Diffusion of Innovation Theory posits that certain individuals (opinion leaders) from a given population act as agents of behavioural change by disseminating information and influencing group norms in their community (Rogers, 1983).

The Theory of Participatory Education has also been important in the development of peer education (Freire, 1970). Participatory, or empowerment, models of education posit that powerlessness at the community or group level, and the economic and social conditions inherent to the lack of power are major risk factors for poor health (Amaro, 1995). Empowerment, in the Freirian sense, results through the full participation of the people affected by a given problem or health condition. Through such dialogue the affected community collectively plans and implements a response to the problem or health condition in question. Many advocates of peer education claim that this horizontal process of peers (equals) talking among themselves and determining a course of action is key to the impact of peer education on behavioral change.

Peer education is an interactive method of teaching or learning which is widely used for educating school and college students, in a variety of different forms [(2,3)]. It has also been used for children, adolescents and support groups, e.g. for clients with HIV/AIDS or chronic conditions like diabetes.[(4)] Many of the studies have shown that this method is as good as or even better than traditional education by teachers [(2,5)] . However, there are very few studies on its effectiveness for promoting a healthy physical activity among adolescent. Advantages of peer to peer education that Peer to Peer Education: Frequently meetings. Trust building. Enjoy the company. Personal matters and Secrets can only be disclosed to friends. Getting easy support and help. Making Influenced each other. [(1)]

A study on the effect of a peer-educational intervention on provider knowledge and reported performance in family planning services: a cluster randomized trial published 2010. The aim of this study was to evaluate the effect of an educational program including peer discussions, based on a needs assessment, on the providers 'knowledge and reported performance in family planning services. The conclusion was that the educational program including peer discussions using existing opportunities with no need for additional absence from the workplace might be a useful complement to formal large group education for the providers. [6]

In recent years a number of publications have comeout about the peer education method used as a tool in HIV preventionfor young people [7]. This survey aimed at testing the effectivenessof the peer education method in HIV prevention in high schoolsettings through a pilot intervention. A peer educationintervention took place in 10 high schools in Athens over a1 year period. The Conclusions wasthe peer education approach can influence the behavior of youngpeople regarding their personal protection from HIV infection.In order to test its effectiveness, peer education should befurther evaluated as a health education method in HIV preventionin high schools, other youth settings and community interventions,where the aim is behavioral change.[8-10]

A study conducted in emirates on the Effects of a rapid peer-based HIV/AIDS educational intervention on knowledge and attitudes of high school students in a high-income Arab country. A peer-based educational intervention was developed and impact evaluated on knowledge and attitudes of high school students in 2 of 4 main cities of United Arab Emirates. The study concluded that Grade 12 students' knowledge about HIV/AIDS was inadequate and attitudes stigmatizing. Peer-based knowledge workshops were effective, especially among females. Concise integrated teaching and workshops designed to address key knowledge and attitudinal deficiencies can be highly effective. [11]

Another study in Ankara A peer education example on HIV/AIDS at a high school in Ankara This peer education intervention study, including two base line studies (one before and one after the intervention), was conducted in four classes of an Anatolian high school in Ankara in 2000. The aim of the study was to evaluate the success of the peer education model. There was a significant difference in the general scores of the students before (29.52; SD = 4.38) and after (31.89; SD = 4.96) education by peer educators (p = 0.000). This study might have assisted the study population in establishing safe sex practices for a healthy sexual future. [12]

Regular physical activity is linked to enhanced health and to reduced risk for all-cause mortality and the development of many chronic diseases in adults. However, many U.S. adults are either sedentary or less physically active than recommended. [13] Children and adolescents are more physically active than adults, but participation in physical activity declines in adolescence. School and community programs have the potential to help children and adolescents establish lifelong, healthy physical activity patterns. [14, 15] In recent years the public health benefits of reducing sedentary lifestyles and promoting physical activity have become increasingly apparent. The Surgeon General's report on physical activity and health emphasizes that regular participation in moderate physical activity is an essential component of a healthy lifestyle. [16, 17] Although regular physical activity enhances health and reduces the risk for all-cause mortality and the development of many chronic diseases among adults, many adults remain sedentary. [18] Although young people are more active than adults, many young people do not engage in recommended levels of physical activity. In addition, physical activity declines precipitously with age .Comprehensive school health programs have the potential to slow this age-related decline in physical activity and help students establish. Lifelong, healthy physical activity patterns. Distinctions between physical activity, exercise, and physical fitness are useful in understanding health research. Physical activity is "any bodily movement produced by skeletal muscles that result in energy expenditure. Exercise is a subset of physical activity that is planned, structured, and repetitive" and is done to improve or maintain physical fitness. Physical fitness is "a set of attributes that are either health or skill-related." Health-related fitness includes cardio-respiratory endurance, muscular strength and endurance, flexibility, and body composition; skill-related fitness includes balance, agility, power, reaction time, speed, and coordination. [19]

Specific forms of physical activity and exercise in which young people might participate include walking, bicycling, playing actively (i.e., unstructured physical activity), participating in organized sports, dancing, doing active household chores, and working at a job that has physical demands. The places or settings in which young people can engage in physical activity and exercise include the home, school, playgrounds, public parks and recreation centers, private clubs and sports facilities, bicycling and jogging trails, summer camps, dance centers, and religious facilities.

Regular moderate physical activity results in many health benefits for adults. For example, it improves cardio-respiratory endurance, flexibility, and muscular strength and endurance. Physical activity may also reduce obesity, alleviate depression and anxiety, and build bone mass density. [20-22]Physically active and physically fit adults are less likely than sedentary adults to develop the chronic diseases that cause most of the morbidity and mortality in the United States: cardiovascular disease, hypertension, non-insulin dependent diabetes mellitus, and cancer of the colon. All-cause mortality rates are0 lower among physically active than sedentary people.[23] Although more research is needed on the association between physical activity and health among young people, [24] evidence shows that physical activity results in some health benefits for children and adolescents. For example, regular physical activity improves aerobic endurance and muscular strength. Among healthy young people, physical activity and physical fitness may favorably affect risk factors for cardiovascular disease (e.g., body mass index, blood lipid profiles, and resting blood pressure). [25] Regular physical activity among children and adolescents with chronic disease risk factors is important: it decreases blood pressure in adolescents with borderline hypertension, increases physical fitness in obese children, and decreases the degree of overweight among obese children. Physical activity among adolescents is consistently related to higher levels of self-esteem and self-concept and lower levels of anxiety and stress. [26, 27]

Although the relationship between physical activity during youth and the development of osteoporosis later in life is unclear, evidence exists that weight bearing exercise increases bone mass density among young people. [28] Increased awareness of the health benefits of physical activity has led to increased recognition of the need for initiatives to reduce sedentary lifestyles The International Consensus Conference on Physical Activity Guidelines for Adolescents recommends that "all adolescents... be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities" and that "adolescents engage in three or more sessions per week of activities that last 20 minutes or more at a time and that require moderate to vigorous levels of exertion". [29,30]

Researchers review the descriptive epidemiology of physical activity in adolescents. The most detailed information on the physical activity habits of adolescents comes from the first National Children and Youth Fitness Study (NCYFS-I). NCYFS-I found that adolescents reported participating in an average of 1.8 hours of physical activity per day in activities outside of physical education. Mean time in physical education averages 100-150 minutes per week, decreasing with age. The results of the Youth Risk Behavior Study (YRBS) indicate that only about half of boys and one quarter of girls participate in vigorous exercise sessions 3 or more days per week. Survey data from Canada found that the prevalence of participation in vigorous aerobic activity at a frequency of 3 or more days per week to be 74 percent for adolescent males and 67 percent for adolescent girls. There have been only a few studies that report the actual types of physical activities in which adolescents participate. In general, bicycling, swimming, and ball sports are the predominant physical activities reported. The NCYFS-I reported that the top five activities for boys were bicycling, basketball, football, baseball/softball, and swimming. For girls, the top five activities were swimming, bicycling, dancing, roller-skating, and walking. When comparing levels of physical activity to levels of physical inactivity, one study found that adolescent males classified as light television viewers (less than 2 hours per day) were more physically fit and more physically active than those in either the moderate or heavy television viewing groups. Other studies found no correlation between hours of television viewing and physical activity. Overall, physical activity shows a downward trend during adolescence, and this trend is more marked in females than in males, in part because of higher male participation in vigorous activities and sports. [31]

Major lifestyle changes in recent years in Saudi Arabia may be leading to physical inactivity and a low level of physical fitness. This paper reviews the current literature about physical inactivity in the Saudi Arabian population and discusses its implications for health. Available data from a small number of studies suggests a high prevalence (43.3%-99.5%) of physical inactivity among Saudi children and adults alike. Furthermore, the proportion of Saudi children and adults who are at risk due to inactivity is much higher than for any other coronary heart disease risk factor. It is recommended that a national policy encouraging activity in daily life be established and more studies are carried out to address physical activity patterns with representative samples of the Saudi Arabian population. [32]

Al-Hazzaa HM reviewed the status of physical activity among Saudi children and adolescents and discussed its implications to cardiovascular health and fitness. From the available evidences, it appears that most Saudi children and adolescents do not meet the minimal weekly requirement of moderate to vigorous physical activity necessary for effectively functioning cardio-respiratory system. Furthermore, active Saudi boys tend to have favorable levels of serum triglycerides and high density lipoproteins-cholesterol compared with inactive boys. Sixteen percent of Saudi

schoolboys are considered obese (fat content is above 25% of body mass). Body fat percent of Saudi boys seems to have increased over the past decade. Body fatness correlated significantly with several coronary artery disease risk factors. Based on the available evidences, promotion of physical activity among Saudi children and adolescents appears warranted and national policy encouraging active living is also needed. [33]

A cross-sectional study was aimed to determine the self-reported knowledge and pattern of physical activity among a sample of 1240 male and 1331 female intermediate and secondary school students in Al-Khobar city, Saudi Arabia. The majority of male and female students knew that physical activity is protective against diseases in general (92.9% and 91.8% respectively) and in the prevention of obesity (69.4% and 78.5%) but had poor knowledge about the role of physical activity in the prevention of diabetes mellitus and hypertension. Significantly more male students than female students practiced physical activity 3+ times per week (45.6% versus 33.7%). Age and the knowledge that exercise protects from obesity were the main determinants of the practice of physical activity among male students. [34]

A study to examine the trends in body mass index (BMI) of Saudi male adolescents between 1988 and 1996. The data set came from three major population-based cross sectional studies. They all involve nationally representative samples and were conducted between 1988 and 1996.This study concluded that rising trends in BMI between 1988 and 1996 are indication of increasing obesity among Saudi male adolescents. More attention to the promotion of healthy nutrition and physical activity throughout childhood and adolescence is required. [35]

Understanding population prevalence of physical activity is important to develop benchmarks for current baseline levels to monitor future changes, and for making country/regional comparisons. The purpose was to review the global prevalence of physical activity levels among youth and adults. Standardized literature searches for articles about national prevalence of physical activity were conducted in PubMed. A total of 34 studies in adults and 28 studies in youth were deemed contemporary (1996 - present) and met the inclusion criteria for this review. Wide variability was present between countries in the prevalence of physical activity (as measured and defined by individual studies). Studies with the highest reported prevalence of physical activity were for men in Sweden (77%), women in Denmark (81%), 12- to 15-year-old boys in Australia (74%) and <12-year-old girls (75%) in China. The countries with the lowest reported prevalence of physical activity were men in Brazil (4%), women in Saudi Arabia (2%) and Thailand (2%), and 17- to 18-year-old boys (0%) and 17- to 18-year-old girls (0%) in Russia. The ranges of prevalence of physical activity, mode of data collection, and determination of meeting the physical activity threshold vary greatly between countries. [36]

A study conducted in USA regarding Physical activity and exercise in women's health. Regular physical activity provides health benefits, including the reduction in risks of coronary heart disease, hypertension, type 2 diabetes mellitus, obesity, colon cancer, and premature mortality. Despite this information, most women are physically inactive. Research findings shed light on the gender differences in physiological responses to physical activity. Patterns and predictors of physical activity vary significantly by gender. Further study is needed of the benefits, barriers, and personally meaningful outcomes of physical activity for women, specifically including the frequently unspoken correlates of urinary incontinence, depression and mood disorders, and obesity. [37]

Rationale:-

- Implementation and practicing a peer to peer education method in a health promotion issues, because information is available but it may be given in a manner that is authoritarian, judgmental, or non-adapted to the young adolescent's values, viewpoint and lifestyle.
- One effective way of dealing with adolescents' issues is peer education, because it is a dialogue between equals.
- Peer education works well because it is participatory and involves the young people in discussion and activities. However lack of using it in physical education program.
- People learn more by doing than just getting information.
- The importance of physical activity among adolescent females.
- Increasing prevalence of physical inactivity among Saudi adolescent females which is a problem of great concern.
- The rising trends in BMI between 1988 and 1996 are indication of increasing obesity among Saudi male adolescents. [37]
- Although adolescence is a time when physical activity levels decline, few interventions have targeted high school-aged girls in the school setting Saudi Arabia.

Aim:-
To promote physical activity among adolescent females in Saudi Arabia using peer to peer education method.

Specific objectives:-
- Implement peer to peer education method in physical education among adolescent Saudi females.
- Asses effectiveness of the peer to peer education method among adolescent Saudi females.
- Promote knowledge of adolescents Saudi females regarding physical activity.
- Promote practice and life skills for enhancing a healthy physical activity among adolescent Saudi females.

Methodology:-

Study area/setting
This study was conducted in 2 schools, Al-Abnaa secondary female's school in King Fahad Air Base and secondary female's school in the National Guard, Taif City. Taif is located at the West of Saudi Arabia. It is located in the Makkah Province of Saudi Arabia at an elevation of 1700 meters on the slopes of the Al-Sarawat mountains. It has a population of 885,477 (2004 census).

Study participants:-
All students regularly attending the school (15year-18year). Those who not welling to participate were excluded.

Study design:-
Randomized controlled trial, using peer to peer educational method.

Sample size:-
Using EPI info version 6 (stat calc – epi calculator), sample size of population was determined as follows:-
Size of population from which the sample was selected: number of female students in the two schools in 2010, are 690. prevalence of physical inactivity = 70%, [32] worst acceptable result = 5% with 95% confidence interval, sample size is 221 in order to account for non-response and achieve reliable and precise result the investigator increased the sample size to 250.

Sampling technique:-
The interventional school was selected by simple random technique.
1. Interventional group (peer to peer education); two classes from each grade, thus, total 4 classes using systematic random technique.
2. Control group (no peer to peer education); three classes from each grade. Thus, total 6 classes using systematic random technique.

Data collection methods, instruments used measurements:-
Training of trainer sessions TOT:-
- **Duration**, 3 days.
- **Venue**, classroom in the selected interventional school.
- **Time**, was arranged with the school administration.
- **Participant**, 3 students from each selected peer to peer education class (total 12 students). Selection based on the following criteria to be sensitive, open minded, a good listener and a good communicator. She was acceptable to the community and be trust worthy. She was possessed good interpersonal skills. A peer educator was also developed leadership and motivation skills and was familiar with the cultural norms and values of the group/community.

Programme schedule:-

	session 1 (45 min)	session 2 (45 min)	session 3 (45 min)
first day	importance of physical activity in adolescents female	presentation skills	training each student work shop and discussion
second day	peers influence your life	influencing the peers	Appreciating others.
third day	helping friends	learning to communicate	identifying the qualities of a peer educator
	All sessions will be interactive work shops in Arabic language		

Questionnaire:-
Self administer pre-designed questionnaire was adapted. Physical activity was assessed using IPAQ [38] short-version. The questionnaire was administered twice before start the education program and one month after to an intervention group of students.

The questionnaire divided into 3 main sections (demographic data, knowledge assessment, practice assessment).

The short form of IPAQ that was used in the present study has seven items providing information on time spent walking, in vigorous- and moderate intensity physical activities and in sedentary activity during the previous seven days.

The items in the short IPAQ form were structured to provide separate scores on walking, moderate-intensity and vigorous intensity activity. Computation of the total score for the short form required summation of the duration (in minutes and frequency (days) for all the types of activities in all domains. Domain specific scores for all activities were calculated by summation of the scores for the specific type of activity.

The volume of activity was computed by weighting each type of activity by its energy requirements defined in METs to yield a score in MET-minutes. METs are multiples of the resting metabolic rate and a MET-minute was computed by multiplying the MET score of an activity by the minutes performed.
IPAQ defines moderate physical activities as those that produce a moderate increase in respiration rate, heart rate and sweating for at least 10 min duration. This is equivalent to 3–6 metabolic equivalents (MET) based on the compendium of physical activity. [39] Vigorous physical activities are defined as those producing vigorous increases in respiration rate, heart rate and sweating for at least 10 min duration. The metabolic equivalent value is above 6 MET. [39]

The following values were used for the analysis of IPAQ Data:-
Leisure-Time Domain:-
1. Walking MET-minutes/week=3.3*walking minutes*walking days
2. Moderate MET-minutes/week=4.0*moderate-intensity activity minutes*moderate days
3. Vigorous MET-minutes/week=8.0*vigorous-intensity activity minutes*vigorous-intensity days
4. Total physical activity MET-minutes/week=sum of walking+Moderate+Vigorous MET-minutes/wee; scores

Active Transportation Domain:-
Walking MET-minutes/week for transport = 3.3* walking minutes for transportation.
Cycle MET-minutes/week for transport = 6.0*cycling minutes*cycle days for transportation.

Domestic Domain:-
Moderate MET-minutes/week=4.0*moderate –intensity activity minutes*moderate-intensity days doing work.
Vigorous MET-minutes/week=5.5*vigorous –intensity activity minutes*vigorous-intensity days doing work.

Sitting:-
Sitting Total Minutes/week = weekday sitting minutes*5 weekdays + weekend day setting minutes*2 weekend days
Validity and reliability:-
The development of an IPAQ for physical activity commenced in Geneva in 1998 and was followed by extensive reliability and validity testing undertaken in 12 countries (14 sites) across 6 continents during 2000. The final results suggest that these measures have acceptable measurement properties for use in many settings and in different languages. IPAQ is suitable for use in regional, national and international monitoring and surveillance systems and for use in research projects and public health program planning and evaluation. International collaboration on IPAQ is on-going and an international prevalence study is under development. **(38)**

The questionnaire was translated and adapted to Arabic language, and then subjected to back-translation as well as it was tested by three consultants from family medicine department.

Pilot study A pilot study was done on 20 students from the selected school. The pilot study will help to:-
Test the understanding of the students of the questionnaires and correcting it accordingly.
- Select the relevant variables suitable for the statistical methods to be used.

- Determine the time needed to answer questionnaire.
- Give an actual situation of the main study.
- Modification after pilot testing will be done.

Variables Independent demographic data (age, grade …) and the intervention peer to peer education
Dependent:- knowledge, practice and attitude towards physical activity.

Statistical analyses:-
After inspecting the data, they were entered into a personal computer and checked again for outliers, according to the guidelines from IPAQ. Data were then analysed using the SPSS program, version 16.0 (SPSS Inc., Chicago, IL, USA). Frequencies and percentages were computed for each demographic characteristic, as well as for all levels of walking, moderate and vigorous physical activities. Paired-t-test was applied to compare physical activity score before and after peer to peer education. For abnormally distributed variables, Wilcoxon matched pairs signed rank test was used instead of paired t-test. One –way analysis of variance (ANOVA) was used to compare mean score of physical activity between more than two subgroups. Least significant difference test was then adopted to compare individual subgroups. In case of abnormally distributed variables, Kruskal-Wallis test was used instead of ANOVA test. In additions, MET-min per week for each of walking, moderate- and vigorous intensity activities were calculated as follows: walking (3.3 X walking minutes X walking days); moderate activity (4.0 X moderate activity minutes X moderate activity days); vigorous activity (8.0 X vigorous activity minutes X vigorous activity days).

Implication of study Results;-
1. To implement the peer to peer educational method in health education especially among adolescents, and involve school students in it through cooperation between ministry of health and ministry of education.
2. Establish policies that promote enjoyable, lifelong physical activity among adolescent females in Saudi Arabia.
3. Provide physical and social environments that encourage and enable safe and enjoyable physical activity for females by communication with the General Presidency for Youth Welfare.
4. Implement physical education curricula and instruction that emphasize enjoyable participation in physical activity and that help students develop the knowledge, attitudes, motor skills, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles.
5. Implement health education curricula and instruction that help students develop the knowledge, attitudes, behavioral skills, and confidence needed to adopt and maintain physically active lifestyles.
6. Provide a range of developmentally appropriate community sports and recreation programs that are attractive to all young females.

Ethical consideration:-
- The study proposal has been approved by the Regional Research and Ethics team in Taif Armed Hospitals.
- Written consent was obtained from the school before start the study. The aim of the study was explained to them.
- Feedback about the results was sent to them.

The peer to peer education programme was done for the control group after completing the research.
- Leaflets and posters about importance of physical activity were distributed to the students after collecting the questionnaire.
- Consent was obtained from each participant to voluntary participate in the study.
- Data were treated confidentially and were used only for the purpose of research.

Limitations
- This study is strictly confined to adolescents in taif city; results may not apply to other age group or other areas in the kingdom of Saudi Arabia.
- The study tool as a questionnaire is subjected to recall bias.
- Due to the nature of the subject as a socio-medical issue, many confounders can distort the results of the study.

BUDGET:-
Self-funded.

Timeline:-

task	duration																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
proposal writing																			
proposal approval																			
study tool preparation																			
pilot testing																			
data collection																			
data entry																			
data analysis																			
final report writing																			
report submission																			

Results:-

Response rate:-

A total of 221 female students completed the questionnaire, representing 88.4% of the total female students invited to participate in the study (n=250).

Demographic characteristics:-

Table (1) shows that the age of the participants ranged between 16 and 18 years with a mean of 17.33±0.64. The majority of them (90.5%) aged between 17 and 18 years. First birth order represented 17.2% of the participants while a birth order over six was reported by 14.0% of the participants. Almost two-thirds of the participants (63.8%) had more than two brothers.

Table 1:-Demographic characteristics of the participants (n=221).

Variables	Number	Percentage
Age in years		
16	21	9.5
17	106	48.0
18	94	42.5
Birth order		
First	38	17.2
Second-third	80	36.2
Fourth-sixth	72	32.6
> sixth	31	14.0
Number of brothers		
One	28	12.7
Two	52	23.5
More than two	141	63.8

Physical activity general knowledge:-

Table (2) demonstrates the participants` general knowledge regarding the important aspects of physical activity. The majority of them recognized that physical activity is protective against diseases in general (88.2%) as well as it is protective against obesity (86.9%). Approximately 74.7% of the participants knew that physical activity is protective from osteoporosis and 65.2% knew that it decreases the rate of psychiatric diseases. Approximately two-thirds of the participants (64.3%) knew that physical activity is protective against diabetes mellitus and hypertension while 62.4% reported that it is important for their future preparation to pregnancy and labour. Slightly more than half of the participants (53.8%) recognized that physical activity decreases early death rate due to cardio-vascular diseases.

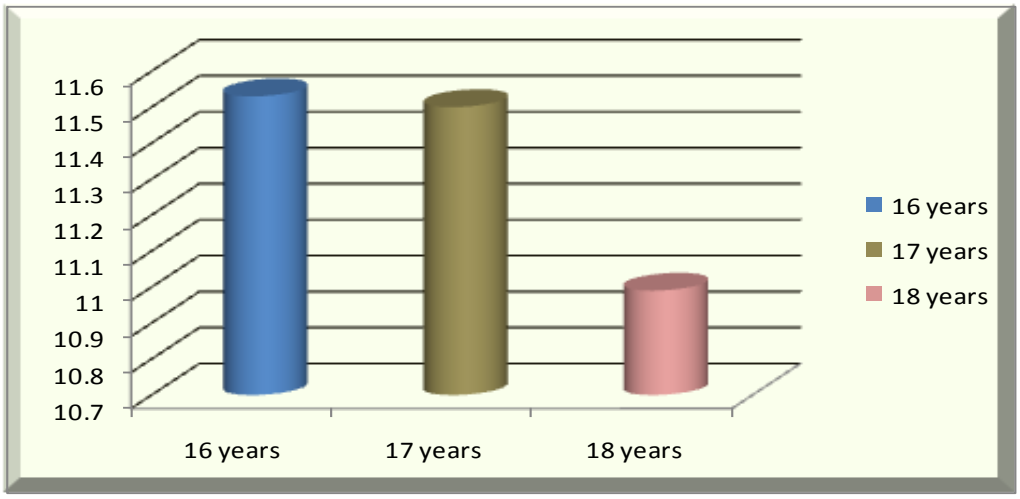
Figure (1) shows that students aged 16 and those aged 17 years had higher significant general knowledge regarding physical activity as compared to students aged 18 years (the mean score was11.62 and 11.47 versus 10.98 respectively, p=0.022).

From figure (2), it is obvious that students whose birth order was more than 6 had a significant lower score for physical activity general knowledge (mean score=10.31) than other birth orders (mean score ranged between 11.08-

11.53). Figure (3) demonstrates that number of brothers was not significantly associated with total physical activity knowledge score (P>0.05).

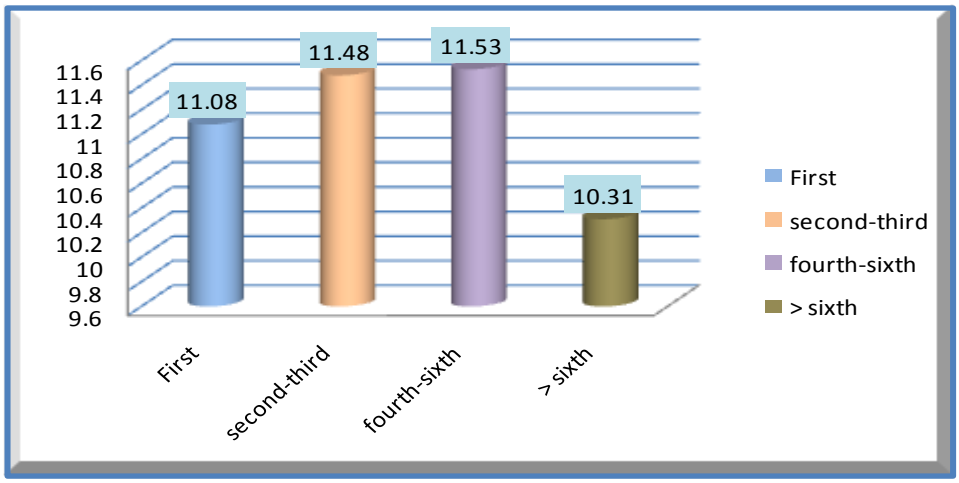
Table 2:-Participants` general knowledge of the important aspects of physical activity (n=221).

Physical activity items	Intervention Group (n=87) No. (%)	Control Group (n=134) No. (%)	Total (n=221) No. (%)
Physical activity is protective against diseases in general	81 (93.1)	114 (85.1)	195 (88.2)
Physical activity is protective against obesity	85 (97.7)	107 (79.9)	192 (86.9)
Physical activity is protective against diabetes mellitus and hypertension	68 (78.2)	74 (55.2)	142 (64.3)
Physical activity decreases early death rate due to cardio-vascular diseases	60 (69.0)	59 (44.0)	119 (53.8)
Physical activity decreases the rate of psychiatric diseases (depression and anxiety)	66 (75.9)	78 (58.2)	144 (65.2)
Physical activity is important for preparation of the girl to future pregnancy and labour	61 (70.1)	77 (57.5)	138 (62.4)
Physical activity is protective from osteoporosis	66 (75.9)	99 (73.9)	165 (74.7)



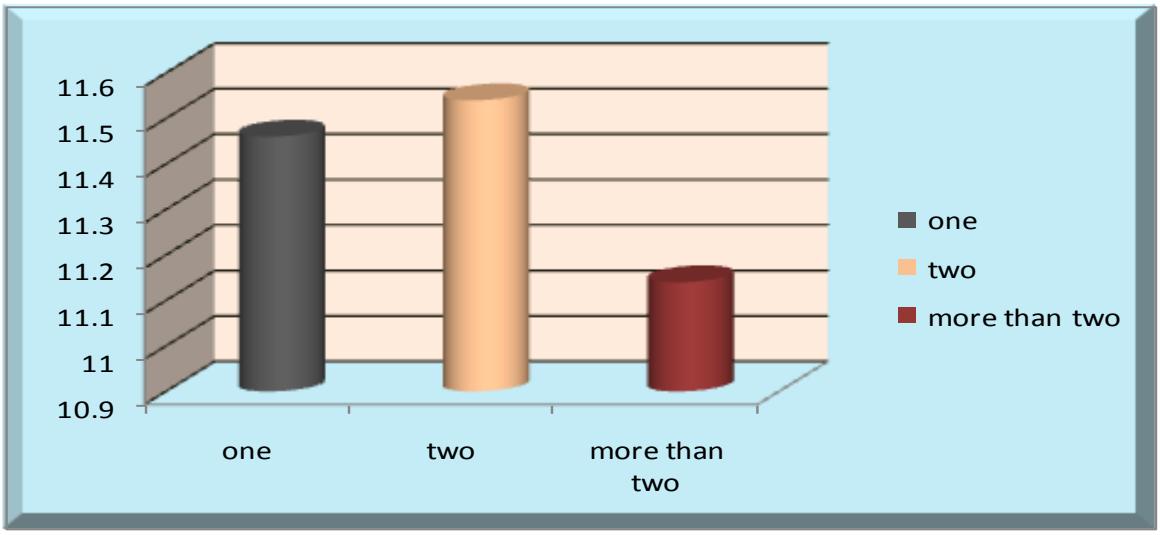
F= 3.256, P=0.022

Figure 1:- Age and total knowledge score of physical activity.



F= 3.256, P=0.022

Figure 2:- Birth order and total knowledge score of physical activity.



F= 0.635, P=0.531

Figure 3:- Number of brothers and total knowledge score of physical activity.

Attitude towards Physical activity:-

As displayed in figure (4), 59.3% of the participants claimed that there were no any educational activities regarding physical activities at their schools while 10% reported that there were such activities either often or always. From figure (5), it is obvious that only 19% of participants reported that they attended health education activity at school regarding the importance of physical activity. More than one-third of the female students (38.9%) claimed that they practiced adequate physical activities as illustrated in figure (6).

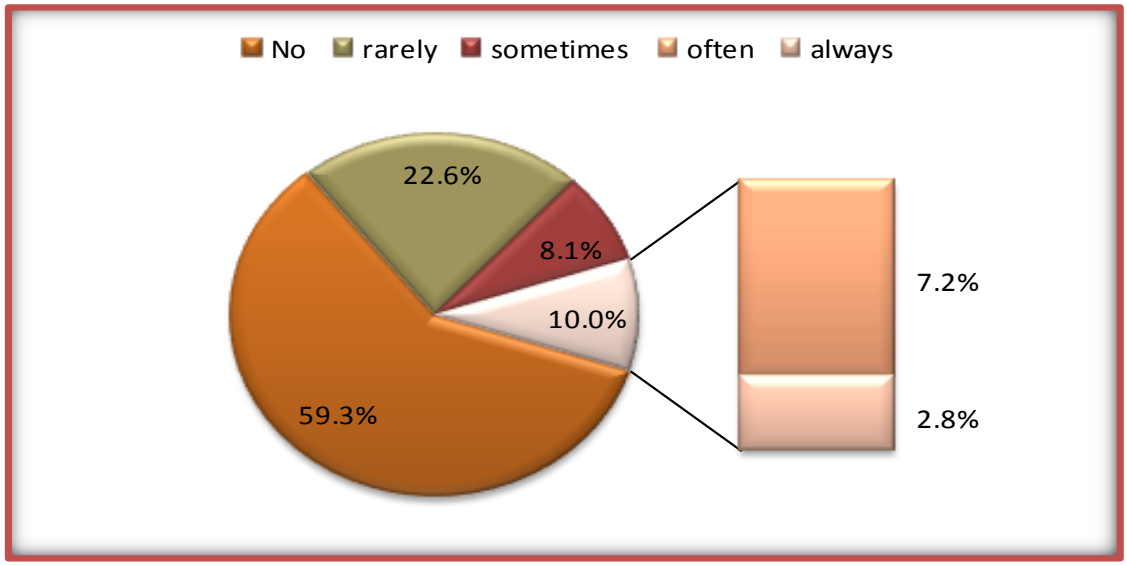


Figure 4:- Educational activities at schools regarding the importance of physical activity.

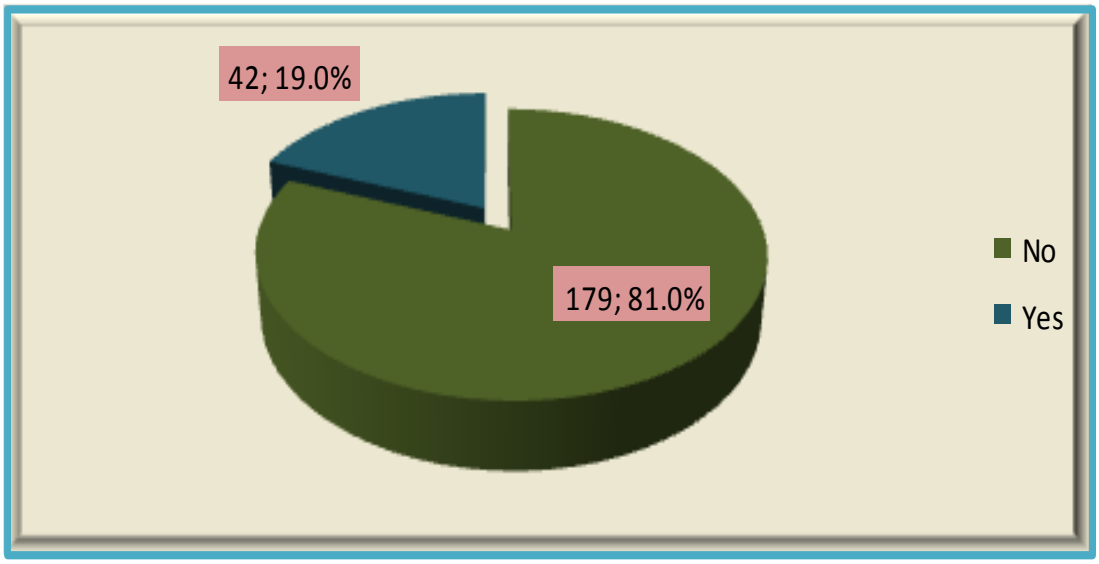


Figure 5:- History of attendance to health education activity at school regarding importance of physical activity.

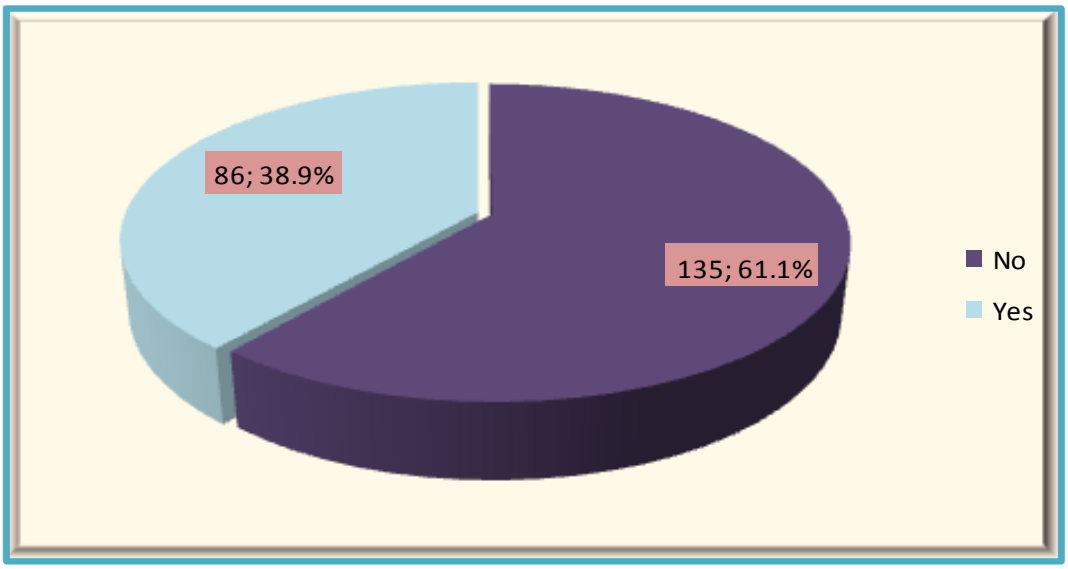


Figure 6:- Practicing adequate physical activity from participants` perspectives.

Peer to peer education and general knowledge of physical activity:-

Table (3) shows that the general knowledge, regarding the importance of physical activity has been improved significantly after peer to peer education as it raised from 12±2.18 to 12.66±2.09 (P=0.048). While in the control group, without peer to peer education, there was no significant change in the knowledge score regarding the importance of physical activity.

Peer to peer education and attitude towards physical activity:-

As shown in Table (4), the attitude towards physical activity has been improved significantly after peer to peer education as it raised from 5.64±1.68 to 6.31±2.68 (P=0.043). While in the control group, without peer to peer education, there was no significant change in the attitude towards physical activity.

Table 3:- Impact of peer to peer education on total knowledge score (0-14) of physical activity.

Physical activity items	Before	After	Paired t-value	P-value
Intervention group (peer to peer education)				
Mean	12.0	12.66		
Standard deviation	2.18	2.09	2.00	0.048
Control group (no peer to peer education)				
Mean	10.81	10.32		
Standard deviation	2.36	2.59	1.59	0.114

Table 4:-Impact of peer to peer education on total Attitude and belief score (0-14) of physical activity.

Physical activity items	Before	After	Paired t-value	P-value
Intervention group (peer to peer education)				
Mean	5.64	6.31		
Standard deviation	1.68	2.68	2.06	0.043
Control group (no peer to peer education)				
Mean	6.74	6.54		
Standard deviation	2.94	2.49	0.575	0.566

Peer to peer education and physical activity:-

Transportation:-

As shown in table (5), there was no statistically significant difference between the score of motor vehicle transportation before or after peer to peer education. The same has been reported in the control group.

From Table (6), the physical activity score of transportation through walking has been raised significantly after peer to peer education (P=0.001). While in the control group, without peer to peer education, there was no significant change in the physical activity score.

Table 5:- Impact of peer to peer education on transportation using motor vehicles.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	1561.4	1517.4		
Standard deviation	1244.5	1265.6	0.411	0.327
Control group (no peer to peer education)				
Mean	692.6	625.6		
Standard deviation	795.8	733.4	0.395	0.429

Table 6:-Impact of peer to peer education on transportation through walking.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	742.7	779.3		
Standard deviation	2606.3	1771.1	3.279	0.001
Control group (no peer to peer education)				
Mean	220.5	318.3		
Standard deviation	469.5	671.3	1.188	0.235

Domestic activity:-

Table (7) shows that 20.4% and 52% of the participants did not perform moderate or vigorous domestic physical activities respectively while 38.8% and 5.9% of them did moderate or vigorous domestic physical activity every day, respectively.

As shown in Table (8), the moderate domestic physical activity has been improved significantly after peer to peer education as it raised from 1120.2±1882.9 to 1398.8±1285 (P=0.019). While in the control group, without peer to peer education, there was no significant change in the moderate domestic physical activity.

Table (9) shows that the vigorous domestic physical activity has been improved significantly after peer to peer education as it raised from 1433.2±3286.7 to 2332.3±2486.2 (P<0.001). While in the control group, without peer to peer education, there was no significant change in the vigorous domestic of physical activity.

Table 7:-Proportions (%) of female students who are engaging in domestic moderate and vigorous physical activity for at least 10 min at a time, based on the numbers of days per week (n=221).

Number of days /week	Moderate domestic Physical activity N0. (%)	Vigorous domestic physical activity No. (%)
Zero	5 (20.4)	115 (52.0)
1-4	74 (33.5)	88 (39.8))
5-6	16 (7.3)	5 (2.3)
7	86 (38.8)	13 (5.9)

Table 8:-Impact of peer to peer education on moderate domestic score of physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	1120.2	1398.8		
Standard deviation	1882.9	1285.0	2.339	0.019
Control group (no peer to peer education)				
Mean	820.0	1462.9		
Standard deviation	1062.5	2708.5	1.215	0.224

Table 9:- Impact of peer to peer education on vigorous domestic score of physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	1433.2	2332.3		
Standard deviation	3286.7	2486.2	3.843	<0.001
Control group (no peer to peer education)				
Mean	1004.5	1137.6		
Standard deviation	1895.7	1588.2	0.895	0.371

Leisure –time physical activity:-

Table (10) shows that 39.4%, 52.1% and 83.3% of the participants did not walk, perform moderate or vigorous domestic physical activities respectively while 18.1%, 8.1% and 3.6% of them walk, perform moderate or vigorous domestic physical activity all days of the week, respectively.

From table (11), it is obvious that there was a significant increase in the score of leisure walking in the two compared groups; Intervention group, where the score raised from 307.6±652.1 to 707.9±964.2 (P<0.001) and control group, where the score raised from 690.7±1481.4 to 1202.1±2186.7 (P=0.004).

Table (12) shows that the leisure moderate physical activity has been improved significantly after peer to peer education as it raised from 307.4±1373 to 759.8±2875.4 (P=0.001). While in the control group, without peer to peer education, there was no significant change in the leisure moderate physical activity.

As shown in table (13), there was a significant increase in the score of leisure vigorous physical activity in the two compared groups; Intervention group, where the score raised from 85.93±269.2 to 701.7±1184.3 (P<0.001) and control group, where the score raised from 325.5±1096.4 to 1020.9±2273.1 (P<0.001).

Table (14) demonstrates that the total physical activity score has been increased significantly after peer to peer education as it raised from 5558.4±5991.2 to 8046.8±7285.2 (P=0.012). While in the control group, without peer to peer education, there was no significant change in the total physical activity score.

Figure (7) shows that students aged 16 and those aged 17 years had higher significant total physical activity score as compared to students aged 18 years (the mean score was 5135and 4970 versus 4228.5 respectively, p=0.022).

From figure (8), it is obvious that students` birth order was not significantly associated with total physical activity general score. Similarly, figure (9) demonstrates that number of brothers was not significantly associated with total physical activity score (P>0.05).

Table 10:- Proportions (%) of female students who are engaging in walking, moderate and vigorous physical activity for at least 10 min at a time, based on the numbers of days per week (n=221).

Number of days /week	Walking No. (%)	Moderate Physical activity N0. (%)	Vigorous physical activity No. (%)
Zero	87 (39.4)	115 (52.1)	184 (83.3)
1-4	71 (32.1)	80 (36.2)	29 (13.1)
5-6	23 (10.4)	8 (3.6)	0 (0.0)
7	40 (18.1)	18 (8.1)	8 (3.6)

Table 11:-Impact of peer to peer education on leisure walking.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	307.6	707.9		
Standard deviation	652.1	964.2	3.504	<0.001
Control group (no peer to peer education)				
Mean	690.7	1202.1		
Standard deviation	1481.4	2186.7	2.918	0.004

Table 12:-Impact of peer to peer education on leisure moderate physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	307.4	759.8		
Standard deviation	1373.0	2875.4	3.413	0.001
Control group (no peer to peer education)				
Mean	744.4	706.9		
Standard deviation	1351.6	1638.9	0.537	0.591

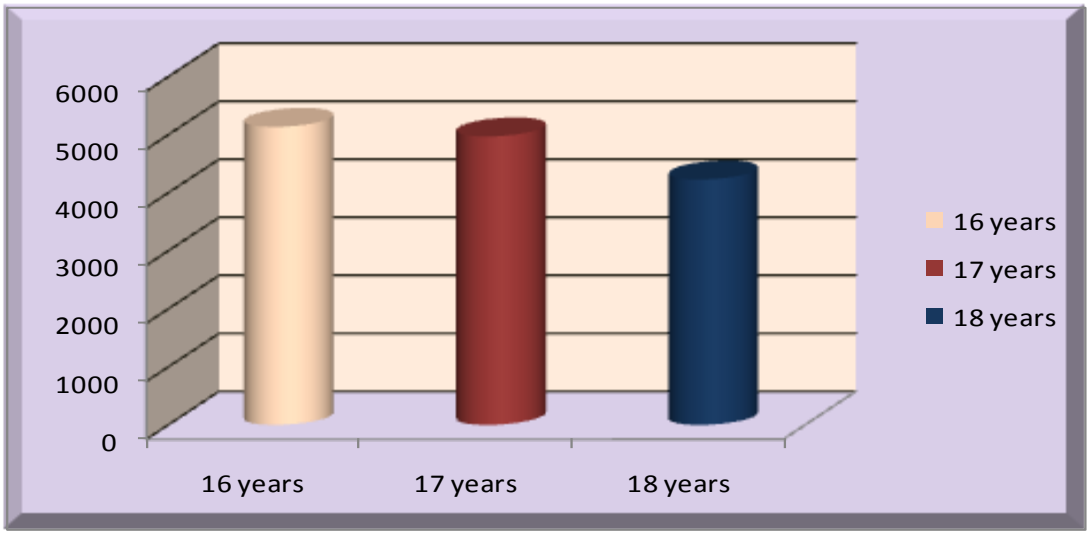
Table 13:-Impact of peer to peer education on leisure vigorous score of physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	85.93	701.7		
Standard deviation	269.2	1184.3	5.247	<0.001

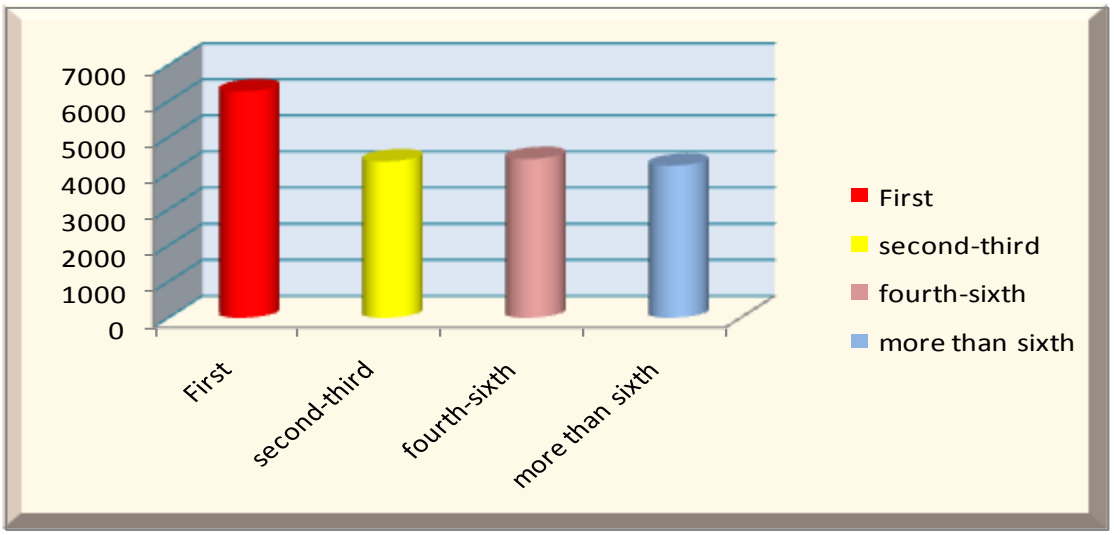
Control group (no peer to peer education)				
Mean	325.5	1020.9		
Standard deviation	1096.4	2273.1	4.364	<0.001

Table 14:-Impact of peer to peer education on total score of physical activity.

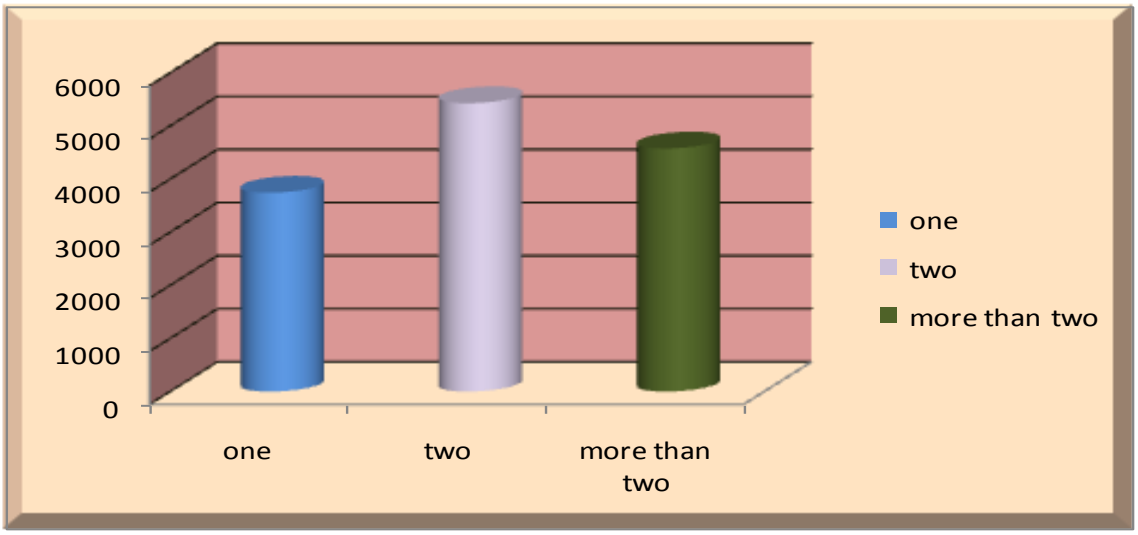
Groups	**Before**	**After**	**Z-value of wilcoxon signed ranks test**	**P-value**
Intervention group (peer to peer education)				
Mean	5558.4	8046.8		
Standard deviation	5991.2	7285.2	2.521	0.012
Control group (no peer to peer education)				
Mean	5495.3	5703.2		
Standard deviation	3976.3	3255.9	0.770	0.195



Chi-square kruskal Wallis value= 6.280, P=0.043
Figure 7:- Age and total physical activity score.



Chi-square kruskal Wallis value= 4.744, P=0.192
Figure 8:- Birth order and total physical activity score.



Chi-square kruskal Wallis value= 0.242, P=0.886

Figure 9:- Number of brothers and total physical activity score.

Setting:-

As shown in Table (15), the setting time in minutes/week, during working days of the week, has been decreased significantly after peer to peer education as it dropped from 628.8±778.9 to 357.2±363.5, (P=0.017). While in the control group, without peer to peer education, there was no significant change in the setting time

Table (16) shows that the setting time in minutes/week, during weekend, has been decreased significantly after peer to peer education as it dropped from 661.7±432 to 428.9±348.4, (P=0.001). While in the control group, without peer to peer education, there was no significant change in the setting time

Table 15:-Impact of peer to peer education on setting during days of the week (Saturday-Wednesday) score of physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	628.8	357.2		
Standard deviation	778.9	363.5	2.380	0.017
Control group (no peer to peer education)				
Mean	348.9	338.8		
Standard deviation	301.7	308.6	0.255	0.799

Table 16:-Impact of peer to peer education on setting during week end score of physical activity.

Groups	Before	After	Z-value of wilcoxon signed ranks test	P-value
Intervention group (peer to peer education)				
Mean	661.7	428.9		
Standard deviation	432.0	348.4	3.473	0.001
Control group (no peer to peer education)				
Mean	438.7	471.2		
Standard deviation	378.1	458.4	0.275	0.783

Discussion:-

Peer education typically involves using the members of a given group to effect change among other members of the same group. Peer education is often used to effect change at the individual level by attempting to modify a person's knowledge, attitudes, beliefs, or behaviors. [1] In the current study, peer to peer education improved significantly transportation through walking, domestic physical activities as well as leisure activities in addition to setting time.

Peer education has been used in many areas of public health, including nutrition education, family planning, substance use and violence prevention. Use of peer education in the realm of HIV/AIDS stands out because of the number of examples of its use in the recent international public health literature. Because of this popularity, global efforts to further understand and improve the process and impact of peer education in the area of HIV/AIDS prevention, care and support have also increased. Peer education may affect change at the group or societal level, by modifying norms and stimulating. Collective action that leads to changes in program and policies. **(1)**

A study of 21 peer education and HIV/AIDS prevention and care projects in 10 countries in Africa, Asia, Latin America, and the Caribbean (AIDSCAP) revealed that peer education has been an effective strategy in the prevention of HIV/AIDS. Study findings documented the need for initial and reinforcement trainings, ongoing follow up, support, supervision; clear understanding of the role of peer educators and continued incentives and motivation techniques. The study also documented that peer educators must broaden their understanding of HIV/AIDS to include care of people living with HIV/AIDS and family planning. The final output of the review was a handbook of guidelines from which future peer education programmes could be designed, entitled "How to Create an Effective Peer Education Project".**(1)**

In most societies, young people often find it difficult to obtain clear and correct information on issues that concern them such as sex, sexuality, substance use, reproductive health, HIV/AIDS and STIs. This happens for many reasons: sociocultural norms and taboos, economic deprivation or lack of access to information. Many times, information is available but it may be given in a manner that is authoritarian, judgmental, or non-adapted to the young people's values, viewpoints and lifestyle. One effective way of dealing with these issues is peer education, because it is a dialogue between equals. It involves members of a particular group educating others of the same group. For example, young people share information with each other, some acting as facilitators of discussions. It usually takes the form of an informal gathering of people who, with the help of the peer educator, (someone of a similar age or social group), discuss and learn about a particular topic together. Peer education works well because it is participatory and involves the young people in discussion and activities. People learn more by doing than just getting information. Peer education is, therefore, a very appropriate way to communicate in the context of HIV / AIDS. It empowers young people to take action. Examples of participatory activities used in peer education are games, art competitions and role-plays. All of these can help people to see things from a new perspective without "being told" what to think or do. **(1)**

A study conducted in emirates on the Effects of a rapid peer-based HIV/AIDS educational intervention on knowledge and attitudes of high school students in a high-income Arab country. A peer-based educational intervention was developed and impact evaluated on knowledge and attitudes of high school students in 2 of 4 main cities of United Arab Emirates. The study concluded that Grade 12 students' knowledge about HIV/AIDS was inadequate and attitudes stigmatizing. Peer-based knowledge workshops were effective, especially among females. **(11)**

In the present study, most of the participants claimed that there were no any educational activities regarding physical activities at their school. In recent years, a survey aimed at testing the effectivenessof the peer education method in HIV prevention in high schoolsettings through a pilot intervention has been conducted. A peer educationintervention took place in 10 high schools in Athens over a1 year period. The Conclusions wasthe peer education approach can influence the behavior of youngpeople regarding their personal protection from HIV infection.**(7)** In order to test its effectiveness, peer education should befurther evaluated as a health education method in other youth settings and community interventions,where the aim is behavioral change.**(8-10)**

During recent years, the Kingdom of Saudi Arabia has witnessed a tremendous development at an astounding rate. The standard of living rises and mechanization has been apparent in all aspects of people's life. As industrialization and modernization progress, a number of changes in physical activity and eating habits are likely to occur. Indeed, physical inactivity and sedentary living with associated low level of physical fitness are increasingly becoming

prevalent in the Saudi society. These lifestyle changes undoubtedly carry unfavorable consequences on health outcomes of the Saudi population. [33]

The present study showed that the knowledge of the beneficial effect of physical exercise as a preventive measure against ill-health in general was high among students. This is a desirable situation that has to be maintained, developed and improved by well-concerted school health education programmes. However, female students' knowledge about the beneficial effects of exercise against specific serious chronic problems, such as diabetes mellitus, cardio-vascular diseases and hypertension, was inadequate. This reflects their lack of orientation about these common chronic health problems which might be due to lack of health information at school or through the mass media as well as lack of physical exercise classes and physical activity conferences in female schools. This result was similar to the study of Khattab et al. in a family practice centre in Abha, Saudi Arabia. [39] This showed that only 22.6% of 146 inactive males and females and 33.0% of 60 moderately active people perceived their inactivity as harmful to their health. The results were also similar to studies conducted among college students in Canada, Nigeria and the USA to detect the adequacy of health knowledge necessary to live a healthy life, which showed that poor knowledge about chronic disease was one of the greatest weaknesses in health knowledge. [40-42]

The present study is the first to report on the impact of peer to peer education on physical activity profile of Saudis using the short-version format of IPAQ. IPAQ is an international project supported By WHO and CDC. The main finding is that the majority of Saudi females were sufficiently vigorously in active, based on absence of vigorous activity for at least 10 min or more per day. The prevalence of inactivity ranged from 39.4% to 83.3%. However, nearly 28% of the adult female population was sufficiently moderately active, based on 5 or more days per week of moderate or walking activities for at least 10 min or more per day. A previous survey estimated the prevalence of inactivity in Saudi Arabia to range from 43.3% to as high as 99%. [32] In a study conducted in Riyadh, The main finding was that not many Saudi adults living in Riyadh were sufficiently vigorously active, based on 3 or more days per week of vigorous activity for at least 20 min or more per day. However, nearly half of the population was sufficiently moderately active, based on 5 or more days per week of moderate and walking activities for at least 30 min or more per day. In addition, inactivity prevalence among both sexes averaged 40.6%. [33] Elsewhere, not many studies have reported physical activity data based on IPAQ. A Brazilian survey using the IPAQ short-form instrument found inactivity prevalence of 41.1% among Brazilian adults aged 20 years and above. [43]

Although differences in survey sampling and assessment methods make the task of comparing inactivity prevalence across countries extremely difficult, the current estimate of inactivity level found in the present study appears comparable to that reported from previous research using different measures of physical activity. Data from the Behavioral Risk Factors Surveillance System (BRFSS) in the USA indicated that the majority (54%) of US adults were not physically active enough to meet the current recommendations of at least 30 min of moderate-intensity activity on most days of the week. [44] In another report analysing 1988– 2002 BRFSS data in the USA, it was revealed that leisure time physical inactivity decreased especially after 1996 in both men and women. [45] However, the US national health objectives for 2010 call for a reduction in the prevalence of no leisure-time physical activity to 20%. [46]

The present investigation indicated that the proportion of adult females who walked 10 min or more per day for at least five days/ week was 28.5%. Brisk walking is a popular moderate type of aerobic activity. The cardiovascular benefits of brisk walking have been demonstrated in middle-aged and older women. [47] In the Women's Health Initiative study, walking briskly for at least 30 min on 5 days per week was associated with a 30% reduction in cardiovascular events over 3.2 years of follow-up. [47] In the USA it has been found that 33.7% of the population were regular walkers, 45.6% occasional walkers and 20.7% never walkers. [48] Males were more regular walkers than females. [48] In the present study, the percentage of never walkers was 39.4%.

The finding in the present report that 46.1% of females had moderately active domestic activities, for at least 5 days per week. The IPAQ instrument assessed all components of physical activity, including moderate-intensity activities done at home, such as carrying loads, scrubbing floors, sweeping and vacuuming. These types of physical activity are more likely to be performed by female respondents than vigorous activities as they are usually dome by males. Another factor that might have contributed to the increased proportion of females doing moderate domestic activities is the fact that females in Saudi Arabia are more likely than males to use stationary exercise machines at home.[33] The preceding discussion, however, cannot rule out overreporting of moderate-intensity physical activity by the female respondents in the present study. A recent study in Belgium using IPAQ found some overreporting of

moderate physical activity. [49] Moreover, in the EUPASS (European Physical Activity Surveillance System) project, several physical activity measures, including IPAQ, were compared. The results showed that physical activity scores as well as overall caloric expenditure of IPAQ appeared rather high compared with previous studies and public health recommendations. [50] However, the IPAQ scoring used in the present study is the one that has been modified recently and therefore is unlikely to be the reason for the high levels of moderate physical activity reported by the females.

In the current study, the attitude towards physical activity has been improved significantly after peer to peer education. Similar findings have been reported by others who found improvement in the participants' attitude towards performance in family planning services after peer to peer discussion. [6]

Finally, the present study is subject to the following limitations. First, this report used the short form of IPAQ. Thus, as is the case with any questionnaire, the respondents could have suffered from recall bias as well as social desirability bias. Second, the sample in the present study was randomly drawn from female secondary schools only with no inclusion of males.

Conclusion:-

From the findings of the present study, we can conclude that Peer to peer education is an effective approach to increase and encourage physical activity among young people. The general knowledge, regarding the importance of physical activity has been improved significantly after peer to peer education. The prevalence of physical inactivity among Saudis secondary school females is relatively high. Such high prevalence of inactivity represents a major public health concern. Female students had good knowledge about the benefits of physical activity. However, they had poor knowledge about the role of physical activity in the prevention of diabetes mellitus and hypertension. Therefore, public policies are needed to encourage active living and discourage sedentary habits. Health-care providers have an important role in promoting physical activity among the population. Furthermore, there is a need for a national study with a representative sample to address the issue of physical activity/inactivity in Saudi Arabia at large.

Recommendations:-

- Peer to peer education should be encouraged and further evaluated as a health education method in community interventions, where the aim is behavioral change.
- Programmes to increase regular physical activity should be established at female schools. Such programmes should include health education, increase supervised physical education and physical exercise sessions, competition and prizes, and active involvement of teachers.
- Positive long-term lifestyle changes, including physical exercise, need to be established early in life.
- Extracurricular physical activity programmes that address the needs and interests of all students should be provided by school authorities.
- Include parents in physical activity instruction and in extracurricular and community physical activity programs, and encourage them to support their children's participation in enjoyable physical activities.
- Regularly evaluate school and community physical activity instruction, programs, and facilities.
- Provide a range of developmentally appropriate community sports and recreation programs that are attractive to all young people.

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Appendices:-

Study questionnaire:-

- **معلومات شخصية**

1- المدرسة : .....
2- السنة الدراسية : .....
3- العمر : .....
4- عدد أفراد الأسرة:
بنات: ..... أولاد : .....
الترتيب: .....

- **المعلومات العامة**

1- النشاط البدني:

☐ يحمي من الأمراض ☐ ليس له تأثير ☐ لا اعلم

2- تاثير النشاط البدني على السمنة:
☐ يساعد على الوقاية من السمنة ☐ ليس له تأثير ☐ لا أعلم

3- تأثير النشاط البدني على الاصابة بمرض السكري وارتفاع ضغط الدم
☐ الوقاية من الاصابة بمرض السكري وارتفاع ضغط الدم ☐ ليس له تأثير ☐ لا أعلم

4- معدل حدوث الموت المبكر بسبب أمراض القلب والشرايين:
☐ يقل مع ممارسة النشاط البدني ☐ لا يتأثر ☐ لا أعلم

5- تأثيرالنشاط البدني على الصحة النفسية (كالقلق والاكتئاب):
☐ يقلل من نسبة حدوثها ☐ ليس له تأثير ☐ لا أعلم

6- هل تعتقدين بأهمية الشاط البدني لتهيئة الفتاة لمراحل الحمل والولادة:
☐ نعم , أعتقد بأهميته ☐ لا, لا أعتقد ذلك ☐ لا أعلم

7- تأثيرالنشاط البدني على العظام لدى الاناث:
☐ يقي من هشاشة العظام ☐ ليس له تأثير ☐ لا أعلم

8- هل تعتقدين بأهمية النشاط البدني داخل المدرسة:
☐ نعم ☐ لا

9- هل تقوم المدرسة بأي نشاط توعوي بأهمية النشاط البدني:
☐ دائماً ☐ غالباً ☐ أحياناً ☐ نادراً ☐ لا تقوم بأي نشاط توعوي

10- هل سبق أن حضرت محاضرة أو أي نشاط توعوي بأهمية النشاط البدني داخل المدرسة:
☐ نعم ☐ لا

اذا كانت الاجابة نعم .. متى ؟ ☐ هذا العام ☐ العام الماضي

11- هل تعتقدين بأهمية توفير مكان مجهز داخل المدرسة لممارسة النشاط البدني:
☐ نعم ☐ لا

12- هل تعتقدين بأنك تمارسين النشاط البدني المناسب والكافي:
☐ نعم ☐ لا

13- لممارسة النشاط البدني داخل المنزل أرى أنه ممكن من خلال:
☐ تحديد وقت يومي لممارسة بعض أنواع الرياضة ☐ الأعمال المنزلية تساعد على تحسين النشاط البدني

- ممارسة النشاط البدني اليومي

❖ الأسئلة الاتية تتعلق بممارسة النشاط البدني بطريقة مباشرة أوغير مباشرة في التنقل والأعمال المنزلية أو ممارسة الرياضة كنشاط يومي في أوقات الفراغ :

1. خلال الأيام السبعة الماضية كم يوم تقضينه في التنقل بواسطة السيارة أو الباص أو أي وسيلة نقل أخرى: ..... يوم
2. كم من الوقت تقضينه كل يوم في التنقل بواسطة السيارة أو الباص أو أي وسيلة نقل أخرى:
..... ساعة في اليوم ..... دقيقة في اليوم

3. خلال السبعة أيام الماضية كم يوم تنقلتي فية مشيا من مكان الى اخر لمدة عشر دقائق على الأقل:

..... يوم في الأسبوع

4. كم من الوقت تقضينه في التنقل مشياً في اليوم الواحد:
..... ساعة في اليوم ..... دقيقة في اليوم

5. خلال السبعة أيام الماضية كم يوم قمتي فيه بأعمال منزلية عنيفة مثل تنظيف ومسح الأرضيات والنوافذ وحمل الأغراض الثقيلة:
..... يوم في الأسبوع

6. كم من الوقت تقضينه في اليوم لممارسة الأعمال المنزلية العنيفة:
..... ساعة في اليوم ..... دقيقة في اليوم

7. خلال السبعة أيام الماضية كم يوم قمتي فيه بالأعمال المنزلية متوسطة الشدة مثل ترتيب الغرف و الكنس وغسل الصحون:
..... يوم في الأسبوع

8. كم من الوقت تقضينه كل يوم في الأعمال المنزلية متوسطة الشدة:
..... ساعة في اليوم ..... دقيقة في اليوم

9. خلال السبعة أيام الماضية كم يوم قمتي فيه بممارسة المشي والهرولة كنشاط رياضي في وقت فراغك:
..... يوم في الأسبوع

10. كم من الوقت تقضينه خلال اليوم لممارسة المشي والهرولة كنشاط رياضي في وقت فراغك:
..... ساعة في اليوم ..... دقيقة في اليوم

11. خلال السبعة أيام الماضية كم يوم قمتي فيه بممارسة النشاط البدني العنيف مثل السباحة السريعة الأيروبيك وركوب الدراجة بسرعة في وقت الفراغ في البيت أو الجيم كنشاط رياضي:
..... يوم في الأسبوع

12. كم من الوقت تقضين في اليوم في ممارسة الرياضات العنيفة كجزء من وقت الفراغ :
..... ساعة في اليوم ..... دقيقة في اليوم

13. خلال السبعة أيام الماضية كم يوم قمتي فيه بممارسة نوع من النشاط الرياضي المتوسط في وقت فراغك كركوب الدراجة بسرعة عادية والسباحة وكرة القدم وكرة التنس كنشاط رياضي :
..... يوم في الأسبوع

14. كم من الوقت تقضينه في اليوم الواحد لممارسة النشاط البدني المتوسط في وقت فراغك كنشاط رياضي :
..... ساعة في اليوم ..... دقيقة في اليوم

❖ الأسئلة الاتية عن الوقت الدي تقضينه في الجلوس والاستلقاء أمام الكمبيوتر أو التلفزيون أو ألعاب الفيديو أو زيارة الأصدقاء والأقارب أو مذاكرة الدروس خلال أيام الأسبوع وأيام نهاية الأسبوع ولا تشمل ساعات الجلوس في السيارة أو الباص التي ذكرت سابقا:

15. خلال السبعة أيام الماضية كم من الوقت تقضينه في الجلوس خلال أيام الأسبوع :
..... ساعة في اليوم ..... دقيقة في اليوم

16. خلال السبعة أيام الماضية كم من الوقت تقضينه في الجلوس خلال عطلة نهاية الأسبوع :
..... ساعة في اليوم ..... دقيقة في اليوم .

Official approvals:-