DANGEROUS CONDUCTS OF HEPATITIS "C" VIRAL INFECTION AMONG ADOLESCENCE STUDENTS, CAIRO GOVERNORATE

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ABSTRACT

Hepatitis C virus (HCV) is an emerging global epidemic disease. Egypt reports the highest incidence in the world. Adolescents are thought to be at risk because of their high-risk behaviors. The study aimed to investigate dangerous conducts of hepatitis "c" viral infection among adolescence students at Cairo governorate. A descriptive cross sectional research design was utilized in this study. Setting; the study was conducted at three governmental secondary schools at Cairo governorate. A stratified random sample of 300 adolescence students, three classes represented 1st, 2nd, 3rd year grad were included in the study. Three tools were utilized in this study. I: Socio-demographic characteristic of the Adolescents are thought to be at risk because of their high-risk behaviors. The study aimed to investigate dangerous conducts of hepatitis "c" viral infection among adolescence students at Cairo governorate. Adolescence students. II: knowledge assessment sheet; consisted of 41 questions related to the adolescence students' knowledge about hepatitis C virus as the nature, mode of transmission, preventive measures and complication. III: Risk behaviors assessment tool; consisted of 19 questions related to the adolescence students’ behaviors for preventing hepatitis c virus as shared equipment, using new blades for shaving. Results indicated that, the mean age of the adolescence students was 16.77 ± 0.998 years, 63% were female. More than two fifths of the adolescence students had average knowledge, while two fifths of them had good knowledge about hepatitis C virus; The Majority (90.7%) of them had higher level of risk behaviors. A statistically significant positive correlation was found between the adolescence student's total risk behavior scores and their age and gender, while a statistically significant negative correlation was found between the student's total risk behaviors scores and their parent's education. The study concluded that, the common risk behaviors reported by the students were; tattooing; piercing ear with unsterile instrument and sharing tools and not vaccinated against hepatitis B virus. The study recommended implementation of health educational program for adolescence students to raise their awareness about hepatitis C virus, and to reduce their risk behaviors.
Keywords: Hepatitis C Virus, Adolescent, Risk Behavior

INTRODUCTION

Hepatitis C virus (HCV) infection remains a major public health burden, with an estimated worldwide. The prevalence of HCV infection in children and adolescents has been reported to vary from 0.05% to 0.36% in the United States and Europe to 1.8% to 5.8% in certain developing countries. However, these reports likely underestimate the true prevalence since current ascertainment practices enable only a small fraction of children expected to be infected with HCV to be identified (Squires, and Balistrer, 2017; Raynes and Greenow, Polis, Elliott, Hardikar, Kesson et al., 2015). Hepatitis C Virus (HCV) has been referred to as "silent epidemic" as millions have the virus, but many of them are not aware of it because they may not experience symptoms for decades after they are infected. That's big reason why hepatitis assessing and treatment are so important (Koh & Valdiserri, 2018). Nowadays, hepatitis C becomes the main concern for both developed and developing countries as it continues to cause substantial morbidity and mortality worldwide. It is now the most common cause of liver transplantation and premature mortality among humans (Walker & Peter, 2018). Adolescence students in general have a broad understanding of health. Their overall sense of functioning seems to be important, which is associated with indicators such as physical, psychological, social and health behavior (Currie et al., 2017). Risk behaviors increase with age and their prevalence differs according to gender. Boys seem to have a higher number of concurrent risk behaviors. There is evidence that health risk behaviors tend to cluster together, with similar risk factors for many different risk behaviors. Risk taking is common and expected in adolescence. Across the lifespan, adolescence is the time of greatest risk taking. The younger population is particularly at risk due to certain practices (share tools of others, tattooing, piercing) known to favor HCV transmission. Such practices often begin during adolescence, when awareness of hepatitis C is low (Chick & Reyna, 2018). Hepatitis C infection is a significant nursing problem because of the high percentage of the population affected and the serious consequences of uncontrolled infection. The main concerns of the pediatric and community health nurse to apply epidemiological principles and knowledge of the disease process to emphasize primary prevention and health promotion through identification and modification of HCV risk factors (Fikry, Ahmed, El-Sherbini & Saad, 2015). Pediatric and Community health nurses are concerned with hepatitis disease prevention, as well as to recognize the association of the disease with specific behaviors especially at home. This can be performed through the health promotion, protection, self-care management, treatment, and follow up of infected cases (Howard et al., 2019).

Aim of the Study:
To investigate dangerous conducts of hepatitis "c" viral infection among adolescence students at Cairo governorate.

Research Questions:

1. What are the dangerous conducts of hepatitis "c" viral infection among adolescence students at Cairo governorate?

2. Is there a relation between adolescence student’s sociodemographic characteristics and their dangerous conducts of hepatitis "c" viral infection?

2. METHODS

Research design:

A descriptive cross-sectional research design was utilized in this study.

Sample and sample size

Three classes representing 1st, 2nd, 3rd year grads were selected from the three governmental secondary schools using stratified random sample. Each class has an average 35 adolescence students in the 3 schools. Data was collected within 6 months from (October 2018 to March 2019). The total sample was 300 students.

Ethical consideration

An approval was obtained from the ethical committee of nursing faculty. An official permission was taken from the Cairo Educational Directorate. An official permission was obtained from the three Educational Departments at Cairo Governorate and the directors of the selected schools. Written consent was taken from the parents of the adolescence students who accept to be included in the study then informed each one about the purpose, nature & benefits of the study. Before distributing the sheet, the adolescence student informed that their answers will not have any relation with their teachers and grades. The investigator emphasized that, participation in the study was entirely voluntary and their rights were secured, anonymity and confidentiality was assured through coding the data.

Setting:

The study was conducted in governmental secondary schools at Cairo governorate. There are thirty two educational directorates at Cairo governorate. Ten percent of these directorates were selected randomly which constitute three directorates. One school from each educational directorate was selected randomly. The selected directorates were EL Sayeda Zainab educational directorate, EL Mataria educational directorate, and Madynt EL Salam educational directorate. Three hundred students were selected randomly from three directorates.
Instruments:

Based on a wide review of recent literature, the study tools were developed by the investigator. Two tools were developed by the investigator to collect data pertinent to the current study. These two tools were designed after extensive review of literature by investigator.

1- Structured interviewing Questionnaire which includes two parts:

   a- Demographic characteristics of the adolescence student, as age, gender, family income, and place of residence, ect….

   b- Adolescence student's knowledge questionnaire: consisted of 41 questions related to the adolescence students' knowledge about hepatitis C virus as the nature, mode of transmission, preventive measures and complication.

To score knowledge of students, a score of (1) was given to each yes answer & a score of (0) was given to each no answer. Then level of knowledge was classified into three levels: good, when score was 75% or more of total score & average, when score was 60% to less than 75% and poor when score was less than 60% of total score.

2- Risk behaviors assessment tool: consisted of (19 questions) divided to three parts. First part included general behaviors of the adolescence students about way of preventing hepatitis C virus (13 questions) such as taking hepatitis B vaccine, using sterilized syringes, … and using sterilized instruments during tattoo and Hijama. Second part included behaviors of male students about way of preventing hepatitis C virus (2 questions) . Third part included behaviors of female students about way of preventing hepatitis C virus (4 questions) .

To score Risk behaviors tool, a score of (1) was given to each yes answer & a score of (0) was given to each no answer. Then level of Risk behaviors was classified into three levels: low, when score was 75% or more of total score & moderate, when score was 60% to less than 75% and higher when score was less than 60% of total score.

Pilot study

A pilot study was carried out on (10%) of the sample to assess the feasibility of the study as
well as clarity and objectivity of the tools, to estimate the average time needed for data collection, to add or omit question, and to identify varies problems that might be encountered during implementation of the study. No modification on the questions were done, adolescence students who participated in the pilot study were included in the study sample.

**Validity and reliability**

Adolescence student’s assessment tools were submitted to a panel of five experts in the field of pediatric and community nursing to examine the content validity (covering, clarity, wording, length, format and overall appearance). Minor modification was performed was valid and reliable professional tool (Cronbach alpha was 0.84).

**Procedure**

An official permission was obtained from the Central Agency for Public Mobilization and Statistics. Formal permission was obtained from the Cairo Educational Directorate to conduct the proposed study. An official permission was obtained from the different Educational Departments at Cairo Governorate and the directors of the selected schools. After explanation of the aim of the study, oral informed consent was obtained from all the adolescence students and their parents.

Before distributing the sheets, the investigator informed each student about the purpose and nature of the study emphasizing that participation in the study was entirely voluntary, anonymity and confidentiality was assured through coding of the data. Every student was told that they have the right and freedom not to complete the study process. The investigator was present with the students during filling of the questionnaire sheets for clarification and to ensure individualized response. The interviewing questionnaire sheet was filled by the adolescence students. The time spent to fill the questionnaire ranging between 10-15 minutes and the investigator met the students two days per week from 10 am till 1 pm. The total sample after 6 months was 300 students. After collection of the data, all data was submitted for second time to the ethical committee for evaluation and final approval was obtained.

**Data analysis**

Data were analyzed using SPSS version 20. Numerical data were expressed as mean ± SD, and range. Qualitative data were expressed as frequency and percentage. Relations between different numerical variables were tested using Pearson correlation. Probability (p-value) less than 0.05 was considered significant and less than 0.001 was considered as highly significant.

**RESULT:**
Part I: Socio-demographic characteristics of adolescence students in percentage distribution (Tables 1-2 & Figure 1, 2, 3, 4).

Table (1): Distribution of the adolescence student's age, place of residence and the crowding index (n=300).

<table>
<thead>
<tr>
<th>Variables</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 18</td>
<td>221</td>
<td>73.7</td>
</tr>
<tr>
<td>18-20</td>
<td>79</td>
<td>26.3</td>
</tr>
<tr>
<td><strong>Mean ± SD</strong></td>
<td></td>
<td>16.77 ± 0.998</td>
</tr>
<tr>
<td><strong>Residence:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>300</td>
<td>100</td>
</tr>
<tr>
<td><strong>Crowding index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>114</td>
<td>38</td>
</tr>
<tr>
<td>Normal</td>
<td>177</td>
<td>59</td>
</tr>
<tr>
<td>Over crowding</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td><strong>Mean ± SD</strong></td>
<td></td>
<td>0.6500 ± 0.231</td>
</tr>
</tbody>
</table>

Table (1) reveals that, 73.7% of the adolescence students are less than 18 years with a mean age of 16.77 ± 0.998 years, all of them (100%) are from urban area. Regarding the crowding index, the study shows that, 59% of the adolescence students have normal crowding index, and 38% have low crowding index.
Figure (1): *Percentage distribution of adolescence students according to their gender (n=300)*

Figure (1) shows that, 63% of the students are females.

Figure (2): *Percentage distribution of adolescence students according to their academic grade (n=300).*
Figure (2) reveals that, 37% of the adolescence students are enrolled in first grade and 33% are in second grade, while 30% are in third grade of secondary school.

**Figure (3): Percentage distribution of adolescence student's family history of hepatitis C virus infection (n= 300).**

![Pie chart showing family history of hepatitis C virus infection](chart)

Figure (3) shows that, 22% of the adolescence students have family history of hepatitis C virus infection.
Figure (4): Percentage distribution of adolescence student's relatives with history of hepatitis C virus infection degree (n= 300).

Figure (4) represent that, 71% of the adolescence students are first-degree relative and 20% & 9% in the second and third degree relative respectively.
Part II: Adolescence student's knowledge about hepatitis C viral infection (Tables 2, 3 & Figure 5,6).  

Figure (5) Percentage distributions of adolescence student's source of knowledge about HCV (n=300).

Regarding source of adolescence student's information, figure (5) reveals that, 41% of the students gain their knowledge from T.V, 19.3% from relative, and only 15% gain their knowledge from school.

Figure (6): Percentage distribution of adolescence student's total knowledge scores (n=300).

As shown in figure (6) 44.3% of the adolescence students have average level of
knowledge about HCV, 40.7% have good level of knowledge, while only 15% have poor level of knowledge about HCV.

Table (2): Percentage distributions of adolescence student's general risk behaviors for HCV (n= 300).

<table>
<thead>
<tr>
<th>Risk behaviors of HCV</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Take hepatitis B vaccine</td>
<td>161</td>
<td>53.7</td>
</tr>
<tr>
<td>Use disposable syringe when required</td>
<td>40</td>
<td>13.3</td>
</tr>
<tr>
<td>Ask dentist to use sterile instruments</td>
<td>73</td>
<td>24.3</td>
</tr>
<tr>
<td>Sharing toothbrush within family</td>
<td>238</td>
<td>79.3</td>
</tr>
<tr>
<td>Sharing towel of others</td>
<td>173</td>
<td>57.7</td>
</tr>
<tr>
<td>Sharing scissors of others</td>
<td>176</td>
<td>58.7</td>
</tr>
<tr>
<td>Have a tattoo</td>
<td>252</td>
<td>84</td>
</tr>
<tr>
<td>Use clean instruments (n = 48)</td>
<td>28</td>
<td>58.3</td>
</tr>
<tr>
<td>Dealing with Hijama</td>
<td>236</td>
<td>78.7</td>
</tr>
<tr>
<td>Use own Hijama tools (n = 64)</td>
<td>30</td>
<td>46.9</td>
</tr>
<tr>
<td>Screened blood for hepatitis c virus</td>
<td>204</td>
<td>68</td>
</tr>
<tr>
<td>Cover the wound</td>
<td>61</td>
<td>20.3</td>
</tr>
<tr>
<td>Accidental needle stick injury</td>
<td>228</td>
<td>76</td>
</tr>
</tbody>
</table>

Regarding general risk behaviors for hepatitis C, table (2) illustrates that, 42.3% & 41.3% of the adolescence students use towel and scissors of others respectively, only 16% of the students have tattoo, where 58.3% of them draw it using unsterile instruments, 21.3% do Hijama, where 46.9 % use Hijama tools of others, only 32% screened their blood for HCV, 79.7% cover their wound and 24% of them have accidental needle stick injury.
Figure (7): Percentage distribution of adolescence student's total risk behavior scores (n= 300)

As shown in figure (7), 90.7% of the adolescence students have higher risky behavior scores, 8% have moderate level of risky behaviors, while only 1.3% have low level of risky behaviors.

Table (3): Correlation between total knowledge scores of the adolescence students in relation to socio-demographic characteristics (n= 300).

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>Total Knowledge Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
</tr>
<tr>
<td>Age</td>
<td>- 0.049</td>
</tr>
<tr>
<td>Gender</td>
<td>0.029</td>
</tr>
<tr>
<td>School level</td>
<td>- 0.111</td>
</tr>
<tr>
<td>Family income</td>
<td>- 0.168</td>
</tr>
</tbody>
</table>
Table (3) illustrates that, there is a statistically significant negative correlation between the adolescence student's total knowledge scores and their Family income and crowding index (p= 0.003 & 0.026) respectively.

Table (4): Correlation between total risk behaviors scores of the adolescence students in relation to socio-demographic characteristics (n= 300).

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>Total Risk Behaviors Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R</td>
</tr>
<tr>
<td>Age</td>
<td>0.167</td>
</tr>
<tr>
<td>Gender</td>
<td>0.177</td>
</tr>
<tr>
<td>School level</td>
<td>0.109</td>
</tr>
<tr>
<td>Family income</td>
<td>0.515</td>
</tr>
<tr>
<td>Crowding index</td>
<td>-0.155</td>
</tr>
<tr>
<td>Family history</td>
<td>0.093</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).
behavior scores and their age, sex, family income and Crowding index (p= 0.004, p= 0.002, p= 0.000 & p= 0.007) respectively.

DISCUSSION

Hepatitis C virus (HCV) infection is increasingly becoming a major public health problem, threat and concern worldwide. The study was conducted to investigate dangerous conducts of hepatitis "c" viral infection among adolescence students at Cairo governorate. Regarding age, results of the current study revealed that, nearly three quarters of the total sample aged between 15- 17 years with a mean age 16.77 ± .998 years. The same results was found by Sami, Salama, Elmosalami, Abdel Latif & Abdel Hamid, (2015) who evaluated the knowledge and risky behaviors towards hepatitis B and C virus infection among 574 Egyptian school children and found that, two thirds of total students were less than 18 years. From the investigator point of view, this age is the actual age of adolescence students in Egypt plus they are the most affected age group associated with greater risky behaviors.

Regarding gender, the results by Abo Salem, Al Shazaly, Salama & Elseidy, (2017) who assessed knowledge and attitudes of the current study revealed that, nearly tworthirds of the students were females. The same result was found regarding hepatitis viruses among 600 adolescence students in menoufia, Egypt and found that, slightly more than tworthirds of the students were females. Also EL Said, (2016) who evaluated the health practices among 328 adolescents' students in governmental schools at Giza governorate in Egypt and reported that, nearly two thirds of the students were females.

Regarding sources of acquired information, the present study revealed that more than two fifth of the students gained their knowledge from TV. This finding was in agreement with Chemaitelly, Abu-Raddad & Miller, (2016) in Egypt who stated that more than half of their participant gained their
knowledge from TV. Also Wakefield, Loken & Hornik, (2017) who conducted study at The Center for Behavioral Research of Cancer in Australia about the effect of mass media campaigns on changing health behaviors, and found that, mass media campaigns are widely used by a large group of populations to deliver health messages. From the investigator point of view, mass media is frequently used for health education because it could be easily repeated so by time it can change people's attitude and behavior. Also young people are watching T.V most of the time so it could be very effective in delivering information about different health topics.

Regarding the total knowledge of the students, the current finding illustrated that, more than two fifths of the students had average knowledge scores, while two fifths of them had good knowledge scores about HCV. The current result agreed with Abo Salem, Al Shazaly, Salama & Elseidy, (2017) in Egypt; Mengal, Tanver & Azam, (2017) in Pakistan; Shahid, Pirzada & Memon, (2017) in Pakistan; Razi, Rahman, Naz, Ghafoor & Ul-lah khan, (2018) in Pakistan who found that, more than half of students had average knowledge scores. These results may be due to lacking in covering of this important topics in schools either informally in different school activities as health clubs or regular health news, health education programs or formally in the form of school curriculum.

The current study revealed a statistically significant negative correlation between the student's total knowledge scores and their family income and crowding index. The current results disagree with the results revealed by Mansour, Yasein, Ghandour, Zaidan, & Abo El-Abaas, (2015) in Egypt who found a statistically significant positive correlation between the student's total knowledge scores and their family income and crowding index. The difference between the two studies could be related to sample selection at the time of data collection.

Limitation:
1- Interpretation of the results should acknowledge some limitation; small sample size. Future studies should try to ensure that research should be performed in a facility that will offer an adequate sample size of adolescence students in different places in Egyptian order to validate findings.

**Conclusion:**

The study was undertaken to investigate the risk behaviors of hepatitis C viral infection among secondary school students. The present study concluded that, the majority of the adolescence students were engaged in risk behaviors predisposing them to HCV as did not take hepatitis B vaccine, tattooing behaviors, piercing behaviors and sharing tools of others.

**Recommendation:**

Based on the study results, the following recommendations are proposed:

1. Health education programs are needed to disseminate information about the disease and its protective measures among adolescence students to enhance their health.
2. Replication of the study on large samples of adolescence students in different places in Egypt.

**Implications for practice**

Training program is effective in improvement adolescence students’ performance regarding dangerous conducts of hepatitis "c" viral infection so, it should be performed routinely.

**Implications for adolescence student’s research**

Findings of this study infer that the majority of the adolescence students were engaged in risk behaviors predisposing them to HCV, thereby Further researches should be conducted in future for updating their knowledge and practice regarding dangerous conducts of hepatitis "c" viral infection.

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