

Effectiveness of Web-Based Psychoeducational Interventions on Adolescents' Knowledge and Future Anxiety during Covid-19 Outbreak

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Abstract

Background: Adolescents' opportunities for social progress have been negatively impacted by the COVID-19 epidemic. Education, physical and general wellbeing are negatively affected. Action must be taken immediately to lessen the long-term effects of the epidemic and safeguard adolescents' futures. **The aim of the study:** To evaluate the effectiveness of web-based psychoeducational interventions on adolescents' knowledge and future anxiety during Covid-19 outbreak. **Subjects and Method:** A quasi-experimental research design was used in this study. A purposive sample of 52 adolescents from Tanta city in Algharbia Governorate was included in the study. This study was an online study that used Google forms. **Tools:** Three tools were utilized: Tool I: Adolescents' knowledge regarding covid-19 questionnaire, Tool II: Perceived Stress Scale – 10, and Tool III: Future anxiety scale. **Results:** The majority of the studied adolescents had poor knowledge levels regarding COVID-19 pre the psychoeducational interventions, while all the studied adolescents had good knowledge post the psychoeducational interventions. There was a decrease in the the studied adolescents' perceived stress and future anxiety levels during COVID-19 post the psychoeducational interventions. And also, a moderate negative correlation between the studied adolescents' knowledge, their perceived stress and future anxiety post the psychoeducational interventions. **Conclusion:** The present study highlighted that web-based psychoeducational interventions effectively increased adolescents' knowledge regarding Covid-19 and decreased their stress and future anxiety levels. **Recommendation:** Further research design is needed to determine the psychological wellbeing of adolescents during COVID-19 as well as reinforce the appropriate measures to maintain their mental health.

Keywords: Adolescents, COVID -19, Future anxiety, Knowledge, Psychoeducational intervention, Web-based.

Introduction

Adolescence is the period of transition between childhood and adulthood. Adolescence isn't only about physical changes and enduring cognitive, social/emotional, and interpersonal changes. External variables, such as their upbringing, culture, religious beliefs, and educational institutions, impact young people's development (Allen, & Waterman, 2019, Spano, 2004).

The World Health Organization (WHO) defines an adolescent as any person between ages 10 and 19. During adolescence, children start to grow more quickly. As a result of these physical changes, they may experience feelings of intrigue and worry, as well as a rise in their need for isolation and independence. Many teenagers begin to explore the possibilities of romantic and sexual relationships. They also

have more disagreements with their parents as they strive for greater autonomy (Allen & Waterman, 2019).

The COVID-19 illness is caused by the SARS-CoV-2 virus, which is responsible for the deadliest pandemic epidemic of the new century. (Khoshaim et al., 2020). On 12 March 2020, the World Health Organization (WHO) proclaimed COVID-19 a pandemic (Viner et al., 2020). Worldwide, about 3 million positive cases have been verified as of April 2020; 20,000 people had died as a result (WHO, 2020). Egypt has been one of the worst-hit nations in the Eastern Mediterranean, with 11,228 confirmed cases and 592 fatalities (WHO, 2020b).

Adolescents are not directly affected by the high burden of COVID-19 because of the nominal case fatality rate in this age group (Ritchie H et al., 2020). As a result of the

public health measures used to combat the pandemic, such as self-isolation and physical distance being extended, school closures, online classes, and the fear of the COVID-19 infection, students may experience stress, anxiety, depression, and other emotional problems (Fegert et al., 2020, Govender et al. 2020). Previous research has shown that teenagers are very worried about the COVID-19 problem and their educational limits, as well as their peer interactions (Ellis et al., 2020, Loades et al., 2020)

Future Anxiety (F.A.) is defined as a state of uncertainty, fear, and worry concerning threatening changes in one's future. It's natural for teenagers to think about the future because they want to be the healthiest, happiest adults. Having a predilection for thinking about the future might lead to F.A. Adolescents having a greater sense of security and hope for the future than individuals at any other period of life. With F.A., people have a hard time with humor, suffer from more unpleasant psychological symptoms, and don't believe they'll be able to handle challenging events in the future. As a result, teenagers and society should pay attention to the problem of F.A. (Kaya & Avci, 2016).

In addition, the rapid distribution of Covid-19 has been accompanied by an increase in media coverage (Chan et al., 2020). Individuals were badly harmed due to this information being disseminated to the public (Lu et al., 2020). Adolescents who spend a lot of time reading and watching the news on COVID-19, particularly on social media, may become confused and view COVID-19 as less dangerous than it really is (Baloran et al., 2020). Due to a lack of knowledge or misinterpretation of COVID-19, these teenagers are more worried and scared of illnesses (Maarefvand et al., 2020). In addition, every hour, the media reports on the number of newly confirmed infections and the number of recently reported fatalities from COVID-19 in all countries. Individuals, particularly teenagers, are, as a consequence, anxious and worried as a result of this knowledge (Yang et al., 2020).

As a result, a lack of awareness and misconceptions regarding COVID-19 may

contribute to worry and psychological suffering. Assessing teenagers' knowledge is particularly crucial for detecting gaps and boosting existing preventive efforts since adolescents may have distinct information demands (Podder et al., 2019). Adolescents must be provided with the proper information, talked to about their fears "both real and imagined," learn to identify and challenge their negative thoughts, and be given a sense of some control over their risk of infection to cope with their anxiety and adjust to this new situation (National Association of School Psychologists 2020).

"Evidence-based therapies for anxiety disorders in children and adolescents include psychoeducation as a key component" (Cassie et al., 2020). Cognitive behavioral therapy (CBT) is a multi-component treatment that includes psychoeducation as one component. Psychoeducation aims to empower the client and help them develop appropriate coping techniques (Hedman & Axelsson, 2019).

The digital revolution has opened up new possibilities for expanding access to effective treatments for mental health conditions (Holmes et al., 2018). There is emerging evidence that technology-delivered psychological therapy is effective for anxiety and other mental health issues in children and adolescents (Podina et al., 2016, Rooksby et al., 2015). Because of children and teenagers' interests and talents in computers, online therapy may be accepted easily because it may save money and time, reduce the risk of covid-19 infection, and alleviate social stigma (Livingstone et al., 2011).

Pediatric nurses who care for children and adolescents must know the effects of COVID-19. Adolescents still are adversely affected, particularly regarding the effects on mental health and wellbeing brought about by social distancing, prevention of socialization, and anxieties about school and educational progression. Pediatric nurses working with and/or caring for children and adolescents must have an up-to-date body of new knowledge to understand the nuances of the disease in younger people and for care to be delivered to mitigate against any negative consequences. In addition, understanding the specific needs

relating to adolescents will help ensure the nurses and other health care professionals offer appropriate support (**Eyimaya &Irmak, 2021**).

Significance of the study

Adolescence is critical for the world population's health, both through direct impacts on development and indirect impacts on health and wellbeing during later life stages (**Patton et al., 2016**). There is a global concern about the effect of the COVID-19 pandemic on psychosocial functioning among adolescents/school-age children, who have faced unusual stressors during this time. Many studies in the literature about coping anxiety (**Hofmann & Smits, 2008; Karahan et al., 2014**), but experimental studies on F.A. could be very limited (**Kaya &Avci, 2016**). Anxiety disorder has a relatively early onset and an extremely high prevalence among adolescents. Anxiety in adolescents is susceptible to the influence of external social environments, including sudden public crisis events (**Holmes et al., 2020**). The prevalence of anxiety among adolescents is 7.1% in the U.S. (**Ghandour et al. 2019**). So, this research was conducted to evaluate the effectiveness of web-based psychoeducational interventions on adolescents' knowledge and future anxiety during Covid-19 outbreak.

Aim of the Study:

This study aimed to evaluate the effectiveness of web-based psychoeducational interventions on adolescents' knowledge and future anxiety during Covid-19 outbreak

Research Hypotheses:

H 1: There will be a significant improvement in the adolescents' knowledge post web-based psychoeducational interventions regarding COVID-19

H 2: There will be a significant decrease in the adolescents' future anxiety levels during COVID-19 outbreak post web-based psychoeducational interventions.

Subjects & Method

Research design:

A quasi-experimental research design with a pre /post-test was used in the study for the

evaluation of knowledge in applying the information presented in a training session or with the introduction of a new concept.

Setting: Middle and secondary schools in Tanta city in Algharbia Governorate were invited to participate in an online electronic questionnaire by using Google forms (Google drive) and submitting the following link(<https://docs.google.com/forms/dle/1FALPQLsd>)

Subjects: A purposive sample of (52) adolescents was included to achieve the aim of the study.

Inclusion criteria include:

- Adolescents aged 13 to 18 year
- Adolescents of both sex
- Free from any chronic diseases
- Free from COVID- 19 illness

Tools of data collection

Three tools were used in this study:

Tool I: Adolescent's knowledge regarding covid-19 questionnaire, which included two parts:

Part 1:Socio-demographic data of adolescents:

It include age, gender adolescents' rank in the family, residence, academic year, parent's education, parent's occupation, housing condition.

Part 2: Adolescent's knowledge regarding covid-19 :

It was developed by the researcher post-reviewing recent literature and consisted of 23 questions. Regarding general knowledge of covid -19 (6 questions), symptoms and methods of transmission (10 questions), treatment and prevention (7 questions) (**Chan et al., 2020; Baloran, 2020; Saravanan et al., 2020**)

The scoring system

Each question had two options yes or no. The total score was calculated by adding up the questions assessing the adolescents' knowledge, and each correct answer was awarded 1 point, and unanswered questions or wrong answers were awarded 0 points. The total knowledge score was 23 and was categorized as poor knowledge less than 50%

(11 points), fair knowledge ranging from 51-75% (12 – 17 points), and good knowledge more than 75% (more than 17 points)

Tool II: Perceived Stress Scale – 10:

It was adapted from **Cohen (1988)** to measure the degree to which adolescents experience psychological stress and designed to assess feelings of being overwhelmed and unable to control or predict events in one's life. In each case, the adolescent was asked to indicate by circling how often he felt or thought a certain way.

The scoring system

Tool III: Future anxiety scale

It was developed by **Shekhaier (2005)** and modified by the researchers based on our culture, as illustrated in the following table. It includes five domains (20 items): fear and worries from future (4 items), despair of the future (5 items), worry thinking about the future (5 items), health and death anxiety (3 items), and future anxiety related to the problem (3 items).

| Domain | Items number of a standardized tool | Items number of modified tool |
|---------------------------------------|-------------------------------------|-------------------------------|
| Fear and worries from future | 1, 2, 5, 15, 27 | 1, 5, 15, 27 |
| Despair of the future | 4, 7, 8, 9, 12, 16 | 4, 8, 9, 12, 16 |
| Worry thinking about the future | 3, 6, 11, 13, 14, 23, 28 | 11, 13, 14, 23, 28 |
| Health and death anxiety | 10, 18, 19, 25, 26 | 19, 25, 26 |
| Future anxiety related to the problem | 17, 20, 21, 22, 24 | 17, 21, 24 |
| Total future anxiety | 1 – 28 | 1 – 20 |

The Scoring system:

Five Likert Scale was used as 4 refer to never; 3 refer to maybe; 2 refer to moderate; 1 refer to a lot and 0 refer to always, and the reverse statement had reverse scores as zero refer to never; one score refers to maybe; two refer to moderate; three refer to a lot, and four refer to always. Total scores ranged from 0 – 80 and were categorized as low (0 – 15), mild (16 – 31), moderate (32- 48), high (49- 64), and very high (65 – 80).

Validity and reliability of the tools:

Content validity was tested by selecting a board of five pediatric and psychiatric nursing experts with more than ten years of experience in the field to assess the tools' clarity, feasibility, and applicability. The content validity index (CVI) was 89% for the tool. Internal consistency of reliability was measured using alpha Cronbach's test was 0.92 for adolescent's knowledge, 0.710 for perceived stress, and 0.864 for future anxiety scale.

Response values was 0 = never, 1= almost never, 2 = sometimes, 3= fairly often; 4= very often. Scores was obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale was made from questions 2, 4, 5 and 10 of the PSS 10 item scale. Individual scores on the PSS can range from 0 to 40, with higher scores indicating higher perceived stress and were categorized as low stress (0-13), moderate stress (14-26) and high perceived stress (27-40).

Procedure of data collection:

- Official permissions to conduct the study were obtained from the responsible authorities.
- Online consent was obtained from subjects post explaining the aim of the study.
- Privacy and confidentiality were assured. Subjects were reassured that the obtained information was confidential and used only for the purpose of the study. The subject's right to withdraw from the study at any phase was respected.
- The study tools were translated into Arabic language and designed by Google forms to be an online questionnaire. All tools were tested for content validity by a jury of five experts in the field of pediatric and psychiatric nursing.
- The suitable statistical test analysis was used for testing the reliability of all tools.
- An online pilot study was carried out with ten subjects to evaluate the tentative tools for clarity, feasibility, and applicability, and

necessary modifications were done accordingly. Those 10 subjects were excluded later from the actual study.

- The researchers began to collect data from the beginning of September to the end of December 2020

The actual study was divided into three phases:

A- Assessment phase:

- In this phase, What's App groups were introduced for all the studied adolescents to explain the study's purpose and gain their cooperation.
- The researcher explained to the studied adolescents how to fill out an online questionnaire.
- The link; [https:// docs. google. com/ forms/ dle/ 1FALPQLsd](https://docs.google.com/forms/dle/1FALPQLsd) was sent to all the studied adolescents to identify their knowledge and future anxiety during the Covid -19 outbreak (pre-psychoeducational intervention).

B-Planning Phase:

- This phase was formulated based on the assessment phase and extensive literature review.

- Goals and expected outcome criteria were considered when planning web-based psychoeducational intervention for the studied adolescents.

- The studied samples were divided into five subgroups; each subgroup encompassed ten subjects, but the last group was encompassed 12 adolescents. Each subgroup attended a total of 6 sessions. These sessions were scheduled as three sessions per week for the duration of two weeks. Each session was lasted for about an hour.

- The researchers used the following learning materials: images, videos, and PowerPoint presentations.

C-Implementing Phase:

- In this phase, the researchers met the study subjects online through Zoom meetings through voice calls, videos, and chat.
- The content of the program is presented in the following table

| Session NO | Subject content | Teaching methods |
|------------|--|--|
| 1 | An introductory session that emphasized establishing rapport between the researchers and the studied adolescents participating in the study and explanation of the purpose of the program | <ul style="list-style-type: none"> • Discussion |
| 2 | Education about Covid-19 definition, causes, manifestation, methods of transmission, complications, and coronavirus hotline. | <ul style="list-style-type: none"> • Powerpoint presentation • Discussion |
| 3 | Education about ways of protection from Covid -19(how to put on, use, take- off, and dispose of a mask and the correct way for hand washing). | <ul style="list-style-type: none"> • Teaching videos |
| 4 | Education about future anxiety (definition, symptoms of future anxiety resulting from Covid -19) Tips for dealing with anxiety during Covid-19 as good communication with others, dealing with negative thoughts, maintaining a healthy daily routine, giving and taking support from family, friends, and others to enhance the sense of security. | <ul style="list-style-type: none"> • Powerpoint presentation • Discussion |
| 5 | It consisted of techniques to cope with future anxiety during the Covid-19 outbreak as notifying the studied adolescents about meditation (definition, steps of meditation) and the importance of practicing exercises such as deep breathing exercises, muscle relaxation exercises, yoga exercises. | <ul style="list-style-type: none"> • Powerpoint presentation • Teaching videos |
| 6 | Summary of the program and the studied adolescents were asked to answer the questionnaire in the online link immediately post psycho-educational intervention. | <ul style="list-style-type: none"> • Discussion |

Results

Table (1): shows that more than half (55.8%) of the studied adolescents from the age (17-18) years. More than two-thirds (65.4%) were males, while the rest were females. Regarding their academic year, near to half (44.2%) of the studied adolescents were in the third secondary school. Concerning their residence, it was observed that more than half of the studied adolescents were from urban.

Table (2): illustrates that there was a highly statistically significant differences in the studied adolescents' general knowledge about covid -19 in pre/post psychoeducational interventions (P-value:0.0001). The mean score of the studied adolescents' knowledge regarding preventive measures and treatment of Covid -19 was 3.0 ± 1.8 pre -psychoeducational interventions while it was 6.9 ± 0.3 post psychoeducational interventions with highly statistically significant differences (P-value:0.0001). This table also showed a highly statistically significant difference in the total knowledge scores.

Table (3): illustrates that there was a decrease in the mean score of the total stress perceived by the studied adolescents post the psychoeducational interventions (13.5 ± 4.6) compared to pre- psychoeducational interventions (19.3 ± 4.1) with highly statistically significant differences (P-0.0001)

Table (4): presents that there was a decrease in the mean score of fear and worries from the future among the studied adolescents post the psychoeducational interventions compared to pre- psychoeducational interventions with highly statistically significant differences (P-0.0001). The mean score of health and death anxiety was 6.5 ± 3.2 pre -psychoeducational intervention while it was 3.9 ± 2.3 post -psychoeducational intervention with highly statistically significant differences (P-0.0001). Regarding the total future anxiety, there was a decrease in the

mean score of the total future anxiety post the psychoeducational interventions compared to pre-psychoeducational interventions with highly statistically significant differences (P-0.0001).

Figure 1: presents that the majority of the studied adolescents (84.6%) had poor knowledge levels regarding COVID-19 pre psychoeducational interventions while all of them (100%) had good knowledge post psychoeducational interventions.

Figure (2): shows a decrease in the total stress perceived among the studied adolescents' students post the psychoeducational interventions, as the majority of the studied adolescents' students (86.5%) had moderate stress during COVID-19 outbreak pre the psychoeducational intervention, while only 55.80% had moderate stress post the psychoeducational interventions

Figure (3): shows a decrease in the total future anxiety level among the studied adolescents' students post the psychoeducational interventions. It was observed that nearly two-thirds of the studied adolescents (63.5%) had moderate future anxiety level during COVID-19 outbreak pre the psychoeducational interventions, while only 28.8% had moderate future anxiety level post the psychoeducational interventions.

Table (5): shows a moderate negative correlation between the studied adolescents' knowledge and their rank ($r = -0.562$, P value < 0.0001). Also, there was a moderate negative correlation between the level of future anxiety and educational level of mothers ($r = -0.509$, P value < 0.0001).

Table (6): Presents moderate negative correlation between the studied adolescents' knowledge and their stress and future anxiety post psycho- educational intervention ($r = -0.524$, P value < 0.014; $r = -0.674$, P value < 0.017 respectively).

Table (1): Percentage Distribution of the Studied Adolescents' Socio-demographic Data (n=52)

| Items | No. | % |
|--|-----|------|
| Age / year | | |
| 13 – < 15 | 9 | 17.3 |
| 15 – < 17 | 14 | 26.9 |
| 17 – 18 | 29 | 55.8 |
| Gender | | |
| Male | 34 | 65.4 |
| Female | 18 | 34.6 |
| Adolescents' rank in the family | | |
| 1 | 10 | 19.2 |
| 2 | 16 | 30.8 |
| 3 | 22 | 42.3 |
| 4 | 4 | 7.7 |
| Academic year | | |
| 1 st middle school | 5 | 9.6 |
| 2 nd middle school | 7 | 13.5 |
| 3 rd middle school | 8 | 15.4 |
| 1 st secondary | 3 | 5.4 |
| 2 nd secondary | 6 | 11.5 |
| 3 rd secondary | 23 | 44.2 |
| Residence | | |
| Rural | 24 | 46.2 |
| Urban | 28 | 53.8 |
| Father's education | | |
| Primary | 5 | 9.6 |
| Intermediate | 12 | 23.1 |
| Secondary | 15 | 28.8 |
| University | 16 | 30.8 |
| Postgraduate | 4 | 7.7 |
| Mother's education | | |
| Primary | 5 | 9.6 |
| Intermediate | 18 | 34.6 |
| Secondary | 11 | 21.2 |
| University | 9 | 17.3 |
| Postgraduate | 9 | 17.3 |
| Father's occupation | | |
| Without work | 3 | 5.8 |
| Worker | 10 | 19.2 |
| Administrative | 18 | 34.6 |
| Teacher | 12 | 23.1 |
| Academic doctor | 9 | 17.3 |
| Mothers' occupation | | |
| Housewife | 34 | 65.4 |
| Worker | 4 | 7.7 |
| Administrative | 7 | 13.5 |
| Teacher | 2 | 3.8 |
| Engineer/doctor / policeman | 5 | 9.6 |
| House condition | | |
| Rent | 18 | 34.6 |
| Ownership | 34 | 65.4 |

Table (2): Relation between the Studied Adolescents Students' Knowledge about Covid 19 and Pre/Post Psychoeducational Interventions. (n=52)

| Items | Pre psychoeducational intervention | Post-psychoeducational intervention | t-test | P-value |
|---|------------------------------------|-------------------------------------|--------|----------|
| General knowledge about COVID-19 | 2.5 ± 0.9 | 4.9 ± 0.4 | 18.195 | 0.0001** |
| Signs & symptoms, methods of transmission, and complication | 3.8 ± 2.1 | 9.1 ± 1.0 | 16.540 | 0.0001** |
| Preventive measures and treatment | 3.0 ± 1.8 | 6.9 ± 0.3 | 15.639 | 0.0001** |
| Total knowledge scores | 8.4 ± 3.4 | 19.9 ± 1.1 | 23.141 | 0.0001** |

**Highly statistically significant differences

Table (3): Relation between the Studied Adolescents' Total Stress Perceived during Covid -19 Outbreak and the Pre/Post Psychoeducational Interventions (n=52)

| Stress Perceived Items | Pre psychoeducational intervention | Post psychoeducational intervention | t-test | P-value |
|------------------------|------------------------------------|-------------------------------------|--------|----------|
| Total stress perceived | 19.3 ± 4.1 | 13.5 ± 4.6 | 6.811 | 0.0001** |

**Highly statistically significant differences

Table (4): Relation between the Studied Adolescents' Future Anxiety during Covid -19 Outbreak and the Pre/Post Psychoeducational Interventions (n=52)

| Items | Pre psychoeducational intervention | Post psychoeducational intervention | t-test | P-value |
|---------------------------------------|------------------------------------|-------------------------------------|--------|----------|
| Fear and worries from future | 7.3 ± 2.6 | 4.1 ± 2.1 | 7.043 | 0.0001** |
| Despair of the future | 10.8 ± 3.1 | 4.9 ± 2.4 | 11.010 | 0.0001** |
| Worry thinking about the future | 9.5 ± 3.1 | 7.8 ± 1.7 | 3.488 | 0.001** |
| Health and death anxiety | 6.5 ± 3.2 | 3.9 ± 2.3 | 4.752 | 0.0001** |
| Future anxiety related to the problem | 6.1 ± 2.9 | 3.8 ± 2.3 | 4.484 | 0.0001** |
| Total future anxiety | 40.02 ± 9.5 | 24.3 ± 9.1 | 8.660 | 0.0001** |

**Highly statistically significant differences

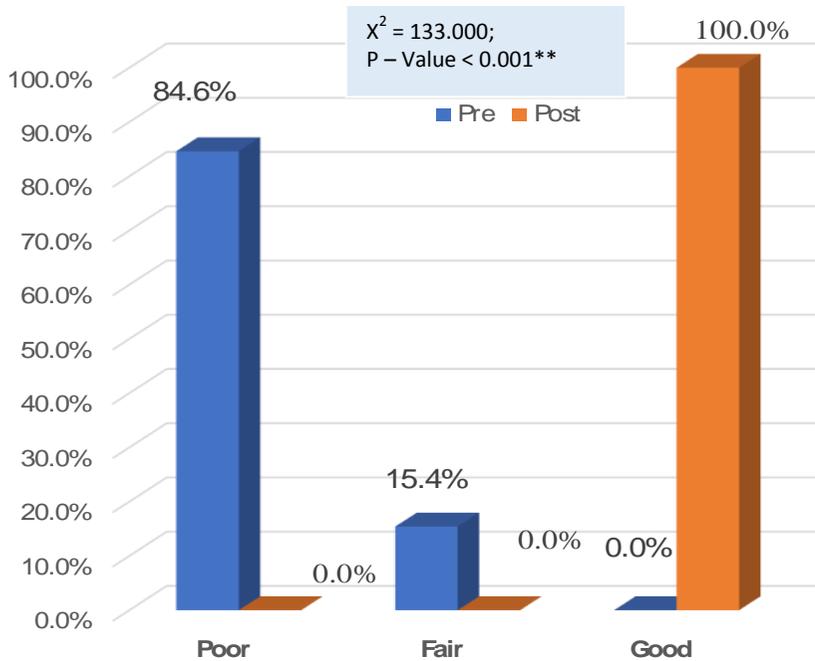


Figure (1): Percentage Distribution of Total Knowledge Level Regarding COVID-19 among the Studied Adolescents' Pre/ Post Psychoeducational Interventions (n= 52).



Figure (2): Percentage Distribution of Total Stress Perceived among the Studied Adolescents' Students Pre /Post Psychoeducational Interventions during Covid-19 Outbreak (n = 52)

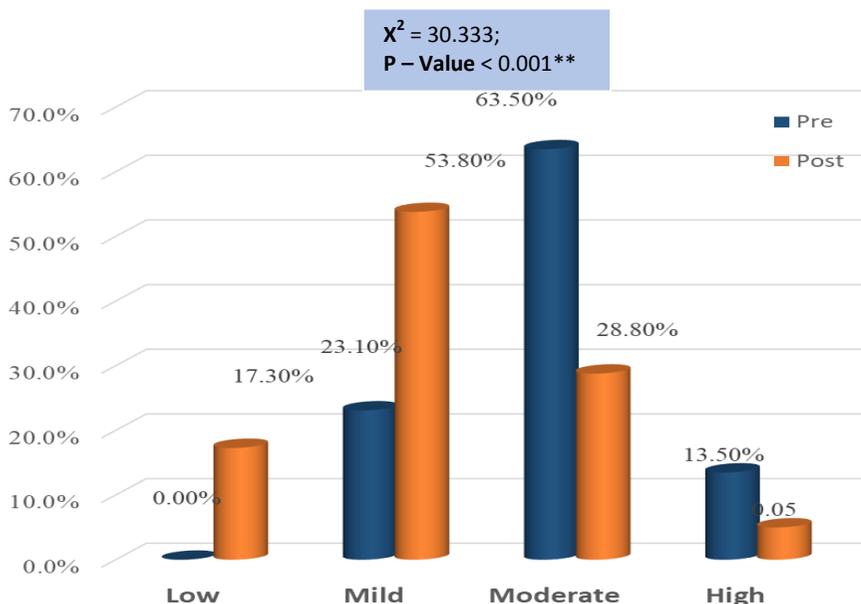


Figure (3): Percentage Distribution of Total Future Anxiety among the Studied Adolescents' Students Pre / Post Psychoeducational Intervention during Covid-19 Outbreak (n = 52)

Table (5): Correlation between Total Knowledge, Stress Perceived, and Future Anxiety during COVID -19 among the Studied Adolescents and their Selected Sociodemographic data Pre Psychoeducational Intervention (n= 52).

| Items | | Knowledge | Stress perceived | Future anxiety |
|--------------------------|-----------|----------------|------------------|----------------|
| Adolescent age | R | -.132- | -.107- | .185 |
| | P – value | .352 | .450 | .189 |
| Adolescent rank | R | -.562 | .024 | -.041- |
| | P – value | .0001** | .865 | .771 |
| Adolescent academic year | R | -.050- | -.161- | .078 |
| | P – value | .726 | .253 | .583 |
| Fathers' education | R | .073 | -.330 | -.368 |
| | P – value | .609 | .017* | .007** |
| Mothers' education | R | .047 | -.297 | -.509 |
| | P – value | .742 | .032* | .0001** |

** . Correlation is significant at the 0.01 level

*. Correlation is significant at the 0.05 level

Table (6): Correlation between Total Knowledge, Stress Perceived, and Future Anxiety during COVID -19 among the Studied Adolescents Pre/ Post Psychoeducational Intervention (n= 52).

| Items | Variables | | Pre psychoeducational intervention | Post psychoeducational intervention |
|-------------------------------------|------------------|-----------|------------------------------------|-------------------------------------|
| | | | Knowledge | Knowledge |
| Pre psychoeducational intervention | Stress perceived | R | -0.100 | 0.014 |
| | | P – value | 0.481 | 0.924 |
| | Future anxiety | R | -0.090 | 0.174 |
| | | P – value | 0.528 | 0.217 |
| Post psychoeducational intervention | Stress perceived | R | 0.156 | -0.524 |
| | | P – value | 0.547 | 0.014* |
| | Future anxiety | R | 0.852 | -0.674 |
| | | P – value | 0.178 | 0.017* |

*. Correlation is significant at the 0.05 level

Discussion

The spread of coronavirus disease (COVID-19) and the accompanying counter measures can significantly impact the wellbeing of adolescents involving future anxiety and stress. Psychological interventions can be effectively carried out by digital care and the internet. Web-based psychological interventions have been demonstrated to be clinically effective in a wide variety of mental disorders (Irvine et al., 2020).

The result of the current study revealed that more than half of students from the age (17-18) years, two-thirds were males while the rest were females. Regarding their academic year, near to half of them were in the third secondary school. Concerning their residence, it was observed that more than half of the studied adolescents were from urban.

The result of the current study cleared that more than three-quarters of the studied adolescents had poor knowledge level about covid-19 pre the psychoeducational interventions. From the researcher's point of view, this could result from students' dependence on social media, resulting in incorrect information about COVID-19. Additionally, this may be due to the age characteristics of the studied sample, where they could receive a great amount of information but have misinterpretation and misunderstanding of this knowledge.

The result of this study is consistent with the study of (Wang et al., 2021), about "The COVID-19 Pandemic and Adolescents' Experience in Sub-Saharan Africa: A Cross-Country Study Using a Telephone Survey", that found that adolescents' knowledge of COVID-19 symptoms, transmission, and prevention was limited, especially in rural settings. The result of the current study is not in agreement with the study of (Saravanan et al., 2020) about "Knowledge, Anxiety, Fear, and Psychological Distress about COVID-19 Among University Students" in the UAE, who found that the majority of the students showed adequate knowledge about COVID-19.

Moreover, the results of this study revealed that all the studied adolescents had a good level of knowledge post the psychoeducational intervention. From the researcher point of view this could be due to providing adolescents with up-to-date and understandable information about

covid-19 during the program, where the adolescents were taught about covid-19, signs& symptoms, mode of transmission, treatment, and preventive measures. This result is consistent with the result of (Matsuda & Kohno, 2016) who found that psychoeducation intervention improves the level of participants' knowledge about the studied disorder (Ekhtiari et al., 2017).

This study observed that the majority of studied adolescents had moderate stress during the COVID-19 outbreak pre-web-based psychoeducational intervention. From the researchers points of view, major cause of stress could be a sudden lockdown, shifting from traditional classes to online classes, no social gathering, fear, and anxiety about COVID-19. Everything happens unpredictably during the pandemic, which causes difficulty in adjusting to uncertain situations.

The result of this study agrees with (Ifdil et al., 2020), who reported that adolescents' stress during the covid-19 outbreak is in the heavy and very heavy categories. A study by (Rodríguez et al., 2020) reported that the level of stress was high among undergraduate students during the pandemic, and according to the results, the uncertainty and the danger perceived by the undergraduates can become a fertile breeding ground for fear, stress, anxiety. Also, the results of (Paredes et al., 2021) about "The impact of the COVID-19 pandemic on subjective mental wellbeing" confirmed that the pandemics' perceived threat generates uncertainty, fear, and increasing stress.

The present study results also showed a decrease in the total stress level perceived by the studied adolescents post the web-based psychoeducational intervention. This could be due to the effect of educational intervention and the increase in knowledge about Covid-19, which decreases stress. This result is supported by results from previous child clinical research, which indicates that interventions based on social-emotional learning could increase children's wellbeing and reduce psychological stress (Jiao et al., 2020). Available empirical evidence from previous natural disasters and pandemics indicates that providing children/adolescents with online psychological services, such as telehealth, has significant positive effects on their mental health (Galea, Merchant & Lurie, 2020 & Lawlor et al., 2014).

The current study results revealed that two third of the studied adolescents had moderate level of future anxiety pre psychoeducational intervention. From the researchers' point of view, this could result from a high level of stress; students are not well-informed about the COVID-19 safety and precaution measures, the sudden change in learning style, and worries about academic progression. Studies show that press/media coverage, false information, and false reports about COVID-19 can aggravate anxiety (Xinhua 2020, Zhou et al., 2020).

The result of this study was supported by the finding of (Baker & Bicak ,2006), who stated that college students are more concerned about their future than people in other developmental stages of life. A recent study by (Duplaga & Grysztar ,2021) is consistent with the result of this study, which found that the COVID-19 pandemic is not only a cause of increased mental symptoms but also of increased future anxiety. Additionally, a previous study conducted in Egypt about "Future anxiety of the student " by (Mo'ashi & Muhamed ,2012) demonstrated a high level of future anxiety among students. According to a study conducted by the Mental Health Association (MHA) in Turkey, about 61% of participants demonstrated increased anxiety about their future (MHA, 2020).

The current study results also revealed that there was a decrease in the level of total future anxiety post the psychoeducational intervention. From the researchers' point of view, this might be due to the positive effect of the psychoeducational intervention and the improvement in the level of knowledge and decrease in the level of stress as they are now aware of the core components of F.A. and have alternative ways of dealing with such emotions. Additionally, participants learned relaxation techniques and a new method that could be used during anxious times to deal with stressors and realized that accepting uncertain life events is the key to coping with F.A. The students also become more aware of their views about the future and determine which of their rational and irrational thoughts, which helped them modify their predictions about future life according to new information.

Separation may lead to feelings of isolation and loneliness; however, online talking and attending online psychology classes can help alleviate these feelings. It's possible to quickly

identify and break away from negative or ruminative thoughts (like thinking about the epidemic over and over again), as well as realize when an emotional shift is taking place (Hilt & Pollak, 2012).

The internet-based/ or online administration of psychological intervention for adolescents has shown promise in treating and reducing anxiety (Jolstedt et al., 2018) both with and without therapist guidance. Also, (Fenfen et al.,2020) found that yoga, meditation-based programs, online chatting with friends, and attending online psychological lectures were associated with a lower risk of anxiety.

(Kaya & Avcı ,2016) demonstrated that university students' decreasing future anxiety and trait anxiety resulted from experimental applications. Additionally, (Najjar ,2013) reported that therapy-based therapy programs effectively reduced future anxiety in a study about "Effectiveness of therapy-based therapy program to eliminate future anxiety and improve the level of aspiration of adolescents with hearing impairment." Similarly, studies of (Jolstedt et al., 2018, Melnyk et al., 2015, Johnston et al.,2013) demonstrated that interventions such as therapist-guided internet therapy, cognitive behavioral therapy -based skill training program, relaxation methods, art-based programs, support services, clinician-led mental health, and psychosocial services effectively decrease mental health issues and anxiety among children and adolescents.

Regarding the correlation between total knowledge, stress perceived, and future anxiety during COVID -19 among the studied adolescents pre/ post psychoeducational intervention, this study proved moderate negative correlation between the studied adolescents' knowledge , their perceived stress and future anxiety post psychoeducational intervention. These results, evidenced by (Cambridge University Press ,2018)summarized that psychoeducation aims to develop an adolescent and their family's knowledge and understanding of a mental health condition to improve their conditions and coping abilities.

This result, consistent with (Ding & Yao ,2020) who provided reference on improving adolescents' mental health level during this crisis event, showed that positive awareness is conducive to enhancing adolescents' self-confidence in dealing with COVID-19 pandemic

and reducing their anxiety caused by this crisis effectively.

Conclusion:

The present study highlighted the effectiveness of web-based psychoeducational interventions on adolescents' knowledge and future anxiety during Covid-19 outbreak. The majority of the studied adolescents had poor knowledge levels regarding COVID-19 pre the psychoeducational interventions, while all the studied adolescents had good knowledge post the psychoeducational interventions. The majority of the studied adolescents had moderate stress during COVID-19 outbreak pre the psychoeducational intervention, while only 55.80% had moderate stress post the psychoeducational interventions. Nearly two-thirds of the studied adolescents had moderate future anxiety during COVID-19 outbreak pre the psychoeducational interventions, while only 28.8% had moderate future anxiety levels post the psychoeducational interventions. And also, a moderate negative correlation between the studied adolescents' knowledge, their perceived stress and future anxiety post the psychoeducational interventions.

Recommendations:

Based on the findings of this study, the following recommendations are derived:

- Adolescents should avoid excessive internet use, e.g., internet surfing related to COVID-19, as it causes anxiety and takes up creative pursuits like art, music, dance, and others that help manage mental health and wellbeing.
- It is critical to respect adolescent peer support. Parents should encourage introverted adolescents to talk with their peers about their emotions and difficulties.
- To fulfill the general population's mental health requirements, the health care system should concentrate on prevention, promotion, and treatment.
- School re-entry rules should be based on strong social distance and cleanliness norms.
- Further research design is needed to determine the psychological wellbeing of adolescents during COVID-19 as well as reinforce the appropriate measures to maintain their mental health.

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