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Efficacy of video educational program on interception of urinary tract infection and neurological stress among teenage girls: An uncontrolled experimental study

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ABSTRACT

Background: Nowadays, there is a lot more emphasis on promoting health, wellbeing, and self-care including stress management strategies. Health is regarded as a natural extension of a wellness-oriented lifestyle. The objectives are to measure knowledge, evaluate the efficacy of a video education program, and examine the relationship between before and after-existing knowledge measurement and specified socio factors on Urinary tract infections (UTI) and neurological stress in teenage girls.

Materials and methods: This study employed an uncontrolled experimental study design. Initially, the mean and standard deviation of before and after-existing knowledge were determined. The 't' test was applied to compare the variance between the before-existing and after-existing knowledge measurements of teenage girls on UTI and neurological stress, to find the efficacy of a video education program on eliminating urinary tract infection and neurological stress in teenage girls. Finally, the Chi-square model is used to measure the relationship between before-existing knowledge measurements and social characteristics.

Results and interpretation: The analyzed data found that the teenage girls' mean after-existing knowledge measurement was 33.46% times greater than their mean before-existing knowledge measurement of 24.6%. According to the findings, there is no strong relationship between teenage girls before-existing knowledge measurement and selected socio-demographic factors.

Conclusion: According to the study's findings, there is a critical need for healthcare providers to educate teenage girls about the interception of UTI prevalence and neurological stress management strategies inorder to avoid UTI among teenage girls.

1. Introduction

UTI is the most common sign of an infection that patients encounter throughout their lifetime with stress [1,2]. It affects persons of all ages, from infants to the elderly, however, it is more common in females of all ages, mainly during teenagers. Teenagers are substantial, and infections are the leading cause of morbidity and healthcare costs in this age category with an increasing population segment [3]. The World Health Organization defines teenagers as between the ages of 10 and 19. The world's largest young people aged 10 to 19 are projected to count 1.2 billion, making this the greatest generation of adolescents in history [4]. As a result, it represents a considerable proportion of the overall population. More notably, teenage years of transformation in their lifestyles [5,6]. Because teenagers are at a vital time in their life when physical and physiological changes occur in their bodies, they must exercise in healthy activities to protect themselves from such a multitude of pathogens. Prevention, it has been sug-

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gested, is better than treatment. As a consequence, they deserve to be noticed [7].

2. Significance of the study

Scientists determined that around 20% of teenagers and children with lower urinary tract symptoms (LUTS) had considerably higher levels of stress in a 2019 study Published data [8]. The data identified as, in children and teenagers, there seems to be a connection between stress and lower urinary tract problems and twenty of the 98 patients were found to be stressed [9]. According to the World Health Organization, one billion women worldwide would be affected by non-sexually transmitted urinary disorders such as bacterial vaginosis, fungal vaginitis, and UTI in association with stress [10]. Teenagers represent around one-fifth of the population. As a result, it might have been considered the biggest proportion of the total population [11,12]. UTIs are extremely prevalent in teenagers, accounting for 3-5 percent of cases. In actuality, the male-to-female sex ratio is 1:50, which is similar to that of young adults [13,14]. Urinary tract infection is the second serious health problem with stress, accounting for around 8.3 million routine check-ups [15].

Operational definitions

Efficacy: It refers to, the substantial disparities in knowledge of urinary tract infections and neurological stress identified among teenage girls on before-existing and after-existing mean knowledge differences.

Video educational program: It refers to, the meticulously crafted research intervention on UTI and neurological stress on video education for measuring the study's efficacy by finding before-existing and after-existing knowledge measurement mean differences.

Interception of urinary tract infection: It refers to, the teenage girls' are familiarity in how to control infections or diseases induced by a category of microorganisms that influence the female urinary system as the major causative organisms of E-coli, klebsiella, etc.

Stress: It refers to, it is the experience of being overwhelmed or unable to deal with mental or emotional strain by the teenage girls during the exposure of UTI condition.

Teenage girls: It refers to, girls between the ages of 13 and 19 who are involved in the specified study area.

Measurement of knowledge: It refers to, the applied grading scale among teenage girls' knowledge on interception of UTI and neurological stress. The knowledge was measured as below average, average, and above average.

The study was limited in the following ways:

The sample for this study was limited to 60 teenage girls with the duration of the experiment was set at 4-6 weeks.

Experimental study was limited to video-educational progamme on interception of urinary tract infection and neurological stress.

Hypothesis

H_0: There is no efficacy of video educational programs on interception of urinary tract infection and neurological stress among teenage girls.

H_A: There is an efficacy of video educational programs on interception of urinary tract infection and neurological stress among teenage girls.

H_1: There are considerable mean variances in before-existing and after-existing knowledge modifications on urinary tract infections and neurological stress among teenage girls.

H_2: There is a strong relationship between before-existing knowledge on UTI and neurological stress with specified demographics.

3. Materials and methods

The current study used an uncontrolled-experimental research strategy to determine the efficacy of a video-educational program on interception of urinary tract infection and neurological stress among teenage girls. A convenience selection strategy was adopted to select 60 teenage girls from the research area. The independent factors in the study were a video educational program on UTI and neurological stress and the dependent factor was knowledge of teenage girls. The study design involves a before and after existing knowledge assessment on UTI and neurological stress among teenage girls. Initially, a well-designed questionnaire was used to assess the study samples before-existing knowledge before implementing the video educational program on UTI and neurological stresses a visual study intervention among the study group. After the study intervention, an after-existing knowledge assessment was obtained from the samples with two weeks of study intervention interval. The data was collected by trained data collectors after the one-week training period. The data obtained were entered into the epi-info version-7, filtered, and exported to the SPSS version 22, where it has been analyzed in compliance with the study's objectives.

Eligibility criteria:

Inclusion criteria:

Participants in the study must be between the ages of 13 and 19 years old, interested to engage in the study and literate and write Telugu.

Exclusion criteria:

The study eliminates teenagers who do not satisfy the conditions: do not live in Ram Nagar, and are unwilling to take part in the study.

A systematic study questionnaire was constructed with the assistance of a review of material on urinary tract infection and neurological stress, such as books, journals, and the internet, as well as the supervision and recommendations of the guide and subject specialists in the context of health care teaching faculty.

The creation of the video educational program

Following a study of the literature and conversations with nursing professionals, the researcher established a video educational teaching method on interception of UTI and neurological stress. The program's objective was to increase teenage girls' expertise in interception of urinary tract infection and neurological stress avoidance using video educational coaching. Nursing subject matter experts endorsed the video educational teaching method. After collecting professional comments and guidance, the final draft of the video educational learning strategy was developed.

The study tool's description is as follows

It consist of a systematic knowledge assessment with two sections as, Part-A and Part-B, was used to collect the data from the study respondents.

Part A: Demographic information about the research participants

This section includes questions concerning the social-economic parameters of the research participants, including age, state of residence, education level, religion, level of income, menarche, menstrual hygiene, daily water intake, bladder pattern, and family status.

Part B: Urinary tract infection knowledge questionnaire

This component consists of a designed questionnaire with 30 questions regarding interception of UTI and neurological stress.

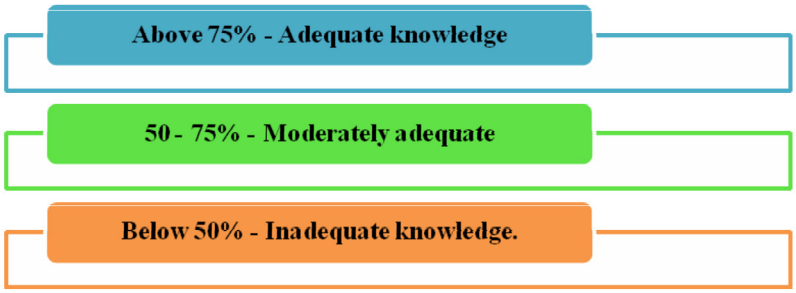

Fig. 1. Knowledge classes for interception of UTI and neurological stress among teenage girls.

For all of the questions, there are a total of 30 points available. Thirty multiple-choice questions were formulated, each with a single correct answer. The correct answer to each question obtains one point, while the wrong response obtains a zero mark. A scoring system was created for the items based on the knowledge scores in percentages, which were separated into three categories (Fig. 1): **Above average, average, and below-average**.

Instrument validity:

The appropriateness of the sample of the domain under consideration is referred to as content validity. It is concerned with the range of items used to measure the variable [16–18]. Six community health nursing professionals and two medical specialists confirmed the data. Following their recommendations, the research instrument was modified as needed.

The tool's reliability and quality:

The degree to which a research instrument produces the same results on repeated measurements is referred to as its reliability. Following that, consistency, accuracy, precision, stability, equivalence, and homogeneity are addressed [19,20]. Following validation, the tool was put to the test and see how reliable it was. The tool's reliability and performance were measured by examining its stability and internal consistency. Stability was determined through the test and retest procedure [21,22]. Internal consistency was calculated by using the spearman formula. Spearmen formula for reliability $(r) = 2r/1 + r$: where 'r' represents the predicted reliability of the item. The tool's dependability was calculated to be 0.93, indicating that it is reliable [23–25].

Pilot research

A pilot test is a small version or trial run carried out just before a larger sample. The pilot study's objective is to capture data to enhance the project or ascertain its feasibility [26,27]. A pilot survey was conducted in Ram Nagar, a Kanpur urban neighborhood, from 6-3-2019 to 13-3-2019. Six teenage girls were chosen using the convenient sampling technique. A before-existing knowledge assessment was administered on 6-3-19, and the video educational program was initiated, followed by after-existing knowledge assessment was carried on 13-3-2019, seven days after the video educational program was implemented. The collected data was entered into epic-info version-7, cleaned, and exported to SPSS version-22, where it was analyzed following the objectives. The results of the pilot study were explained, and it was ascertained that the research instrument was reliable and valid, and therefore could be used in the main research work.

Procedure for data collection

Data collection is the method of gathering information needed to solve research questions. This research was carried out in Kanpur's rural community of Ram Nagar. The data was collected by designated data collectors who had received prior data collection training. Formal administrative approval was obtained from the medical officer, as well as from the study participants as required. Between March 18th to April 13th, 2019, data for this study were collected with the provision of instructions among teenage girls. A convenience sampling strategy was used to pick 60 teenage girls. Initially, a before-existing knowledge assessment was taken followed by, on March 20, 2019, the video educational program was implemented. Finally, with the duration of two weeks after-existing knowledge assessment was carried out from the study samples. The collected data were screened and entered into epi-info version-7 for further cleaning before getting transferred to SPSS version-22 for further data interpretation.

Data analytical procedure

Data analysis incorporates the management concerning and interpretation of research data, as well as the experimenting of research hypotheses using the collected data. Descriptions, inferences, and predictions would be used to examine and interpret the data [28,29]. The following approaches were applied to examine the received data from the study subjects. In response to research items, frequencies and percentages distribution patterns have been used to construct the Demographic information of teenage girls. The before-existing and after-existing knowledge measurements of teenage girls on interception of UTI and neurological stress were calculated using the mean knowledge measurement and standard deviation. The 't' test model was used to test the efficacy of video educational programs employing before-existing and after-existing knowledge measurements. To ascertain the relationship between before-existing knowledge measurement and specific factors, the Chi-square model was used.

4. Results

The study findings were assembled and discussed under the following headings.

Division I: Characterization of socio-variables of teenage girls.

Division II: Before-existing and after-existing Knowledge measurements on interception of Urinary Tract Infection and neurological stress.

Division III: Mean, standard deviation, and mean percentage of teenage girl's before-existing and after-existing knowledge measurements on interception of Urinary Tract Infection and neurological stress.

Division IV: Efficacy of a video educational program on interception of Urinary Tract Infection and neurological stress measurement by before-existing and after existing knowledge using a paired t-test.

Division V: Examine the Relationship of before-existing knowledge measurements on interception of UTI and neurological stress with selected demographic variables by applying the Chi-square model.

Table 1
Frequency distribution of teenage girl's knowledge on interception of Urinary Tract infection and neurological stress in Kanpur: (N = 60), March 2019.

Sl.No	Knowledge	Before measurement		After measurement	
		F	%	F	%
1	Below average	21	21%	-	-
2	Average	37	37%	34	34%
3	Above average	2	2%	26	26%

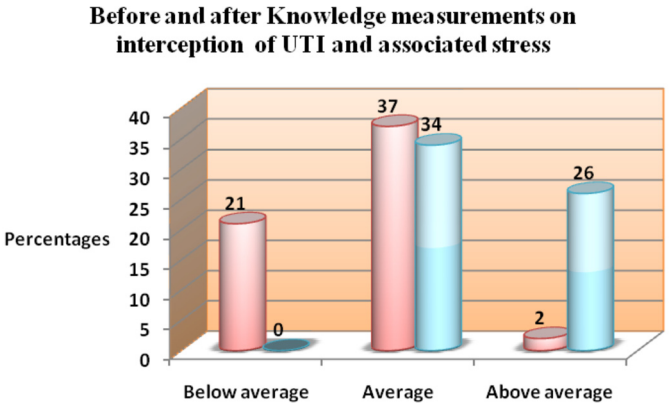

Fig. 2. Before-existing and after-existing knowledge measurements on interception of UTI and neurological stress among teenage girls in Kanpur: (N = 60), March 2019.

Division-I: Socio-aspects of 60 teenage girls: (N = 60)

In contexts of the 60 sampled populations, the significant proportion 46.7% were between the ages of 13 - 15, 33.7% were between the ages of 16 - 18, and 20% were between the ages of 19 - 20. Concerning education, 66.7% had primary education, and 33.3% had higher education. In aspects of family status, 10% were married and 90% were single. The majority of respondents, 60% managed to earn Rs. 3000/- or less, 20% earn Rs. 3001-4000/-, and 20% earn more than Rs. 5000/-. Most of the respondents 88.3% were living in a rural area, 11.7% were living in an urban area. Half of the respondents 50% were Hindus, 25% were Muslims, and 25% were Christians. The majority of the respondents 90% have attained menarche, 10% have not attained Menarche. 41.6% of the respondents were using cloth, and 58.4% were using sanitary pads. Related to drinking water 46.7% of respondents were drinking 1-3 litre, 30% were drinking 3-5 litre per day, 23.3% were drinking more than 6 litres per day. About bladder pattern, most of the respondents, 63.3% were 2-4 times, 26.7% were 5-6 times, and 10% were more than 6 times.

Division-II: Before-existing knowledge and after-existing knowledge measurements on interception of UTI and neurological stress

It was identified that before - existing knowledge assessment the majority of the respondents have an average knowledge measurement of 37 i.e. 37% whereas after existing knowledge measurement was average knowledge measurement was 34 i.e. 34%. The existing knowledge measurement below-average level was 21 i.e. 21% whereas in after existing knowledge measurement below average was '0'. Where in the before existing knowledge measurement the above-average knowledge level was 2 i.e. 2% and in the after existing knowledge measurement, the above-average knowledge level was 26 i.e. 26% with highly increased knowledge measurements among teenage girls, shown in Table 1, Fig. 2.

Division-III: Mean, SD of before-existing and after-existing knowledge measurements on interception of UTI and neurological stress

On assessment, it was observed that in the before-existing knowledge assessment the mean knowledge measurement of teenage girls for 30 items was 14.78 with an SD of 19.52, and the mean percentage measurements of teenage girls were found to be 24.63%, and in the after-existing knowledge assessment, the higher mean knowledge measurement of teenage girls for 30 items was 20.08 with an SD of 21.3 and the mean percentage measurements of teenage girls found to be 33.96%. Hence, the hypothesis stated H_1 was approved (Table 2).

Table 2
Mean, Standard Deviation, Mean Percentage of before and after existing knowledge measurements on interception of UTI and neurological stress among teenage girls in Kanpur: (N = 60), March 2019.

SL. No	Knowledge	No of Items	Mean knowledge	SD	Mean percentage
Before measurement	Interception of UTI and neurological stress	30	14.78	19.52	24.63%
After measurement			20.08	21.3	33.96%

Division-VI

At the significance level of 0.05, the calculated "t" values (cv = 14.32, tv = 1.671) are greater than the critical value. This demonstrates that there is an authentic difference between the before-existing and after-existing knowledge measurements of teenage girls about interception of UTI and neurological stress. As an outcome, the testing of hypotheses H_A is acknowledged, and it is inferred that there is a substantial difference in teenage girls' knowledge levels as a result of the effect of video educational programs on interception of UTI and neurological stress. The null hypothesis was rejected in this particular instance, and the alternative hypothesis was supported in Table 3.

Division-V

Relationship between teenage girl's before-existing and after-existing knowledge measurements on interception of UTI and neurological stress with pre-defined demographic factors

The variables of Age, education, residence, income, menarche and menstrual hygiene, intake of water, bladder pattern, family status, and religion were not found to be neurological with knowledge on interception of UTI and neurological stress among teenage girls in before existing knowledge measurements.

limitations of the study

The sample size of teenage girls was limited to 60 who were ready and able to participate in the experiment.

Implications for nursing

A health awareness campaign is needed to raise the efficiency of teenage girls and to focus on promoting optimum health. The study's findings have significance in the nursing workforce, education, administration, and research.

Workforce

The results of this analysis will assist in their understanding of teenage girls and in providing healthcare for eachother. Nursing care includes health promotion. Healthcare workers can help in the interception of urinary tract infections and neurological stress among teenage girls. Nurses in the community must comprehend their role in informing teenage girls concerning health. Nurses should be able to make people more aware of the interception of urinary tract infections and neurological stress by empowering people to adopt healthy behaviors [30,31].

Education

Students should be trained in organizing and conducting health education programs in nursing schools and colleges, based on the

Table 3
Efficacy of video educational program on interception of urinary tract infection and neurological stress among teenage girls in Kanpur, March 2019, (N = 60).

S.No	Test	N	Mean	Standard deviation	t′-value	t′-table	Level of significance
1.	Before Measurement	60	14.78	3.18	14.32	1.671 at 0.05 level	Significance
2.	After Measurement		20.08	4.2			

N = Sample size.

need for nursing education. The teaching components are included in the comprehensive care education program. It must be demonstrated that we have access to reliable and consistent educational programs on the interception of urinary tract infections and neurological stress. Students need to be taught how to concentrate their efforts on reducing mortality rates and should participate in various health programs [32,33].

Administration

The nurse administrator should play a pivotal role in communicating information about the importance of establishing curriculums for urinary tract infection prevention and neurological stress. Such approaches necessarily entail good collaborative strategies for optimal resource consumption, as well as an increased focus on quality planning and organizing strategies [34,35].

Research

Nursing research is an innovative teaching strategy that places importance on effectiveness and cost. Nursing research in the fields of teenage girls' education, notably in the interception of urinary tract infections and neurological stress, is needed. The researcher should take a glance into whether the teenage girls recently acquired skills and knowledge assist to prevent urinary tract infections. Similar studies could be conducted on a greater scale and in a range of settings [36,37].

Recommendations

A video educational program could be used in an experimental study on the interception of urinary tract infections and neurological stress on large-scale samples. It is possible to conduct a comparative study of urban and rural areas. A similar study can be conducted using experimental and control groups. School healthcare providers must construct self-instructional materials on urinary tract infections and their preventative measures, such as reading packages and video films that can be used in schools continuously. Patients should be compelled to help their children with precautionary advice on attempting to avoid urinary tract infections and neurological stress. As part of their in-service education, teachers should be instructed on how to prevent urinary tract infections. A large part of the population could be studied in about the same way. Every school in India is required to have a school health nurse [38].

5. Discussion and conclusions

Urinary tract infection is the inflammatory condition of the urinary system produced by a range of microbes such as Escherichia coli, Klebsiella, and many others. Infection, painful urination, immediacy, increased pressure in the suprapubic area or unpleasantness, abdominal discomfort, cold sweats, and other clinical manifestations of a urinary tract infection can usually happen. A similar study was reported at Nagpur on Knowledge Regarding Urinary Tract Infection among Adolescent Girls. The present investigation specifies that the pre-test's lowest score is 3, the highest score is 11, the mean score is 6.1, and the percentage was 20.33%. The post-test lowest score is 4 and the highest score is 17, with a mean score of 10.86 and a percentage of 36.2% [39]. The current study, it was observed that in the before knowledge assessment, the mean knowledge measurement of teenage girls for 30 items was 14.78 with an SD of 19.52, and the mean percentage measurements of teenage girls were found to be 24.63%, and in the after knowledge assessment, the higher mean knowledge measurement of teenage girls for 30 items was 20.08 with an SD of 21.3 and the mean percentage measurements of teenage girls found to be 33.96%. According to another survey, the most of nursing students had an inadequate degree of understanding about UTIs and preventative hygiene measures. According to with report's results, there is an increasingly pressing need for health providers to educate teenage girls about interception of UTI and neurological stress measures to minimize the occurrence and mortality rates of urinary tract infections in the general public.

Realization

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CRediT authorship contribution statement

All authors equally contributed, to prepare and approve the final manuscript.

Declaration of competing interest

The authors declare that they have no conflict of interest.

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