

Effectiveness of an Educational Video Intervention on Anxiety Level of Patients prior to Diagnostic Coronary Catheterization in Al-Nasiriya's Cardiac Center

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Abstract

Objectives: The study aims to: Evaluate the effectiveness of an educational video intervention in lowering level of anxiety among patients admitted for diagnostic cardiac catheterization in Al-Nasiriya's cardiac center; determine the association between educational video and demographic characteristics such as (age, gender, and educational level, socioeconomic status).

Methodology: A quasi experimental study design is carried out at Al-Nasiriya's Cardiac Center in Al-Nasiriyah City, from October 11th, 2016 to April 24th, 2017. To evaluate the effectiveness of an educational video intervention in lowering level of anxiety among patients admitted for diagnostic cardiac catheterization and to Determine association between educational video and demographic characteristics such as (age, gender, and educational level). A non-probability (Purposive) of (80) patients admitted for diagnostic cardiac catheterization divided into two group (40) patients as control group and (40) patients as study group.

To achieve the objective of the study the researcher has established the constructed questionnaire, which consists of three parts (1) sociodemographic data form that consist of 8-items (2) medical sheet which consist (hypertension, diabetes mellitus and smoking), (3) Physiological parameters before intervention consist of (systolic and diastolic BP, PR, and RR), (4) Measurement of physiological parameters and anxiety's level prior to catheterization. It was composed of two sections (1) physiological and section (2) used a scale to assess level of patient's anxiety, by means of direct interview technique for diagnostic cardiac catheterization. Reliability of is determined through a pilot study and the validity through a panel of (17) experts.

The data were described statistically and analyzed through use of the descriptive and inferential statistical analysis procedures.

Results: The results of the study showed that there was a positive effect of the education by used video in lowering the level of anxiety of the patients entering the coronary arterial catheterization procedure where the results proved by the cut point (2) that the level of anxiety in the control group was much higher than in the study group after the video presentation. There is a significant association between socio-demographic characteristics variable and reveal is statistical significant association between patient's age and effectiveness of educational video at posttest. There is no statistical significant association between patient's gender and effectiveness of educational video at pre and posttest, while that there is statistical significant association between patients education level and effectiveness of educational video at posttest $P=Probability < 0.05$.

Conclusions: An educational video intervention provided at the beginning of the waiting period have a positive impact on patients' anxiety. Considering findings of this study, it can be concluded that education through film by considering patients' native language improve patients' knowledge and reduce anxiety before cardiac catheterization.

Recommendations: The study recommended that the study can be replicated on large samples to have a wider generalization of findings. A similar study may be conducted to assess the effectiveness of educational video on anxiety level and satisfaction of patients undergoing other invasive procedure, consultation with cardiologists, or surgical operations. Based on the study findings, we suggest that video information could become an important role of nurses and physicians for decreasing anxiety, stress and depression of the patients.

Keywords: Anxiety, Educational, Effectiveness, video, Catheterization

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I. Introduction

Cardiovascular diseases (CVDs) are disorders of the heart and blood vessels and include coronary heart disease, cerebrovascular disease, rheumatic heart disease and other conditions. Four out of five CVD deaths are due to heart attacks and strokes. Individuals at risk of CVD may demonstrate raised blood pressure, glucose, and lipids as well as overweight and obesity. These can all be easily measured in primary care facilities⁽¹⁾.

According to the American Heart Association (2017), CVDs are the number one cause of death globally, more people die annually from CVDs. An estimated 17.7 million people died from CADs in 2015 representing 31% of all global deaths. Of these deaths, an estimated 7.4 million were due to coronary heart disease. Out of the 17 million premature death (under the age of 70), 82% are in low- and middle-income countries, and 37% are caused by CVDs⁽²⁾.

In patients with ischemic heart disease, acute coronary syndrome is the most dramatic and frightening condition. The treatment for ischemic heart disease can be clinical (by using drugs), surgical (consisting of myocardial revascularization when cardiac catheterization (CATH) indicates severe obstructive lesions) or vascular (angioplasty), depending on the patient's clinical situation and the degree of coronary artery obstruction⁽³⁾.

Individuals who have undergone cardiac CATH (including coronary angiography with or without PCI) experienced elevated anxiety and fear related to unknown procedural outcomes and their potential impact on future functioning, and they experienced distress during the procedure from a decreased sense of control over bodily functions and corresponding dependence upon competence of medical staff^(4, 5).

Anxiety is highest during the waiting time immediately prior to the procedure. Characterized by symptoms such as palpitations, sweating, trembling or shaking, shortness of breath or smothering sensations, chest pain or discomfort, and/or stomach distress. Anxiety activates the sympathetic nervous system leading to a variety of physiological responses such as tachycardia, sweating, increased oxygen consumption, hypertension, force of heart contraction and arrhythmias, which can worsen the evolution of the patient. In addition, it can have a negative effect on a patient's clinical outcomes such as treatment refusal and reduced tolerance to pain before, during and after the CATH intervention. Nurses should implement effective non-pharmacological strategies in order to control patients' anxiety^(3, 6, and 7).

II. Objectives Of The Study

The study aims at:

- (1) Establish awareness of patients on the importance of effectiveness of an educational video intervention in lowering patient's anxiety prior to catheterization.
- (2) Examine the patient's anxiety level before cardiac catheterization.
- (3) Prevent future complications related to increase level of anxiety prior to cardiac catheterization

III. Methodology

The quasi-experimental design (two-dimensional demonstration of two-group pre-test-posttest design) conducted on coronary catheterization patients towards instructional health education with application of pre-post- test approach for the study group and control group in assessing their level of anxiety and the application of health education for the study group. It carried out in order to accomplish the early stated objectives. The study was started from (11th October 2016 to 24th April 2017). Because the researcher needs to perform the educational health instruction about the cardiac catheterization, the researcher implemented the health instruction at Al-Nasiriyah's Cardiac Center. A randomized controlled trial with one experimental group and one control group was used. A sample of 80 patients (40) as study group and (40) as control group admitted for their first diagnostic coronary catheterization (coronary angiography) at AL-Nasiriya Cardiac Center.

The Construction of the Instrument to Assess the Patient's level of anxiety after intervention: consisted of three parts:

Part I: Relevant demographic characteristics of the patient's self-questionnaire: This portion is concerned with the collection of basic socio-demographic data gained from the patients from interview questionnaire sheet as (age, gender, education level, marital status, occupation, monthly income for family).

Part II: Medical Sheet Information: It was developed to the collection of basic patients' past medical history data related to the medical condition it was obtained from the patients from interview questionnaire sheet such as (hypertension and diabetes mellitus).

Part III a: Physiological Parameters before Intervention: This portion related to evaluation of (systolic and diastolic BP, PR, and RR) for participant before administration of education about CATH.

Part III b: Measurement of Physiological Parameters and Anxiety's Level prior to Catheterization: It was composed of two sections: section one related to physiological parameters (systolic and diastolic BP, PR, and RR) and section (2) used a scale to assess level of patient's anxiety, which was conducted by⁽⁸⁾. Composed

of (10) items, the answer of these items was (Always), (Sometime) and (Never), which rates as [3] for answer (always), [2] for answer (sometime) and [1] for (Never).

Validity and Reliability: The content validity of the study instruments was determined by panel of (21) experts.

Statistical Data Analysis: The data is analyzed using SPSS (Statistical Package for Social Sciences) version 20.0 Application of statistical analysis system. The subsequent statistical data analysis methods were used for analyzing and assessing the results of the study: Descriptive (Frequencies and Percentages), Mean of score; inferential data analysis that include in Analysis of variance.

IV. Results

Table (1): Distribution of the (80) Diagnostic Catheterization Patients According to the Demographical Characteristics:

Basic Information	Groups	Frequency	Percent	Study group		Control group	
				F	%	F	%
Age groups	18 – 28	0	0	0	0	0	0
	29 – 39	12	15.0	5	12.5	7	17.5
	40 – 49	23	28.75	9	22.5	14	35.0
	50 – more	45	56.25	26	65.0	19	47.5
	Total	80	100	40	100	40	100
Mean ± SD 43.2± 0.999							
Gender	Male	40	50.0	20	50.0	20	50.0
	Female	40	50.0	20	50.0	20	50.0
	Total	80	100	40	100	40	100
Education Level	Not read and write	30	37.5	16	40.0	14	35.0
	Read and write	7	8.75	3	7.5	4	10.5
	Primary	19	23.75	10	25.0	9	22.5
	Intermediate	13	16.25	6	15.0	7	17.5
	High School graduate	8	10.0	3	7.5	5	12.5
	Institute and colleague graduation or higher	3	3.75	2	5.0	1	2.5
	Total	80	100	40	100	40	100
Marital status	Married	59	73.75	30	75.0	29	72.5
	Single	2	2.5	0	0	2	5.0
	Widow	18	22.5	9	22.5	9	22.5
	Divorced	1	1.25	1	2.5	0	0
	Total	80	100	40	100	40	100
Occupation	Employee	9	11.25	4	10.0	5	12.5
	Free Work	17	21.25	9	22.5	8	20.0
	Retired	16	20.0	10	25.0	6	15.0
	Other	3	3.75	1	2.5	2	5.0
	Housewife	35	43.75	16	40.0	19	47.5
	Total	80	100	40	100	40	100
Income	Sufficient	22	27.5	12	30.0	10	25.0
	Insufficient	14	17.5	6	15.0	8	20.0
	Barely sufficient	44	55.0	22	55.0	22	55.0
	Total	80	100	40	100	40	100
Residency	City	59	73.75	28	70.0	31	77.5
	Urban	21	26.25	12	30.0	9	22.5
	Total	80	100	40	100	40	100

No.: Number, F: Frequency, %: Percentage

This table indicated that 45(56.25%) of the catheterization patients within age group of (50-more) years with a mean of (43.2) years. Concerning to the level of education, the greater number of them do not read

and write and they are accounted for 30 (37.5%) of the sample. Regarding to the marital status, the majority of the sample are married and they accounted for 59(73.75%) of the whole sample.

Related to occupation status, the results indicated that a highest percentage of the study sample are (housewife) and they are accounted for 35(43.75%).

The majority of monthly income of the study sample individuals are barely sufficient and they are accounted 44(55%).

Table (2): Distribution of the (80) Diagnostic Catheterization Patients According to the Medical Sheet Information:

	Groups	Frequency	Percent	Study group		Control group	
				F	%	F	%
	Hypertension	34	42.5	19	47.5	15	37.5
	Diabetes mellitus	6	7.5	3	7.5	3	7.5
	Diabetes and Hypertension	24	30.0	13	32.5	11	27.5
	Have not medical history	16	20.0	5	12.5	11	27.5
	Total	80	100	40	100	40	100
Smoking	Yes	14	17.5	5	12.5	9	22.5
	No	40	50.0	19	47.5	21	52.5
	leave	26	32.5	16	40.0	10	25.0
	Total	80	100	40	100	40	100

F: Frequency, %: Percentage.

This table Shows that the highest percentage of the sample 34(42.5 %) were hypertensive, while 24(30 %) with diabetes and hypertension.

Related to smoker, the result indicated that (50%) of sample not smoking, (32.5%) with history of smoking and (17.5%) were smoker.

Table (3): anxiety level prior to catheterization for study and control group at (posttest) by Frequency, Mean of Score and Assessment Regarding under (cut off point = 2):

Items	Study group						M.S	Assess	Control group						M.S	Assess
	Always		Sometime		Never				Always		Sometime		Never			
	F	%	F	%	F	%			F	%	F	%	F	%		
1.You feel that your heart is beating fast	2	5	6	15	32	80	1.25	F	12	30	17	42.5	11	27.5	2.02	P
2. Is there a tremor in your limbs	1	2.5	7	17.5	32	80	1.22	F	6	15	14	35	20	50	1.65	F
3. Feeling uncomfortable and stable?	4	10	11	27.5	25	62.5	1.47	F	29	72.5	8	20	3	7.5	2.65	P
4. Experienced difficulty before he sleeps?	4	10	12	30	24	60	1.5	F	27	67.5	8	20	5	12.5	2.55	P
5. Have you ever felt fear without reason?	1	2.5	9	22.5	30	75	1.27	F	9	22.5	15	37.5	16	40	1.82	F
6. Do you feel confused and distracted?	5	12.5	19	47.5	16	40	1.72	F	22	55	17	42	1	2.5	2.52	P
7. Are you upset for no reason?	1	2.5	14	35	25	62.5	1.4	F	12	30	21	52.5	7	17.5	2.12	P
8. Do you feel tense or nervous?	1	2.5	10	25	29	72.5	1.3	F	15	37.5	14	35	11	27.5	2.1	P

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9. Have trouble dreams in your sleep?	3	7.5	0	0	37	92.5	1.15	F	3	7.5	4	10	33	82.5	1.25	F
10. Do you feel that you are the kind that counts things?	8	20	17	42.5	15	37.5	1.62	F	24	60	16	40	0	0	2.6	P

f=frequency, %=percent, M.S= mean score, P=pass, F=fail

The findings of this table show that answers of control group were presented (pass) in items (1, 3, 4,6,7,8 and 10), while for study group they are (failed) in all items.

Table (4): Comparison between Study and Control Group at Pre- test of physical parameter:

Physical Parameter	Study Group Mean ± S.D.	Control Group Mean ± S.D.	T test	Value
Systolic Blood Pressure	149.63 ± 22.267	145.85 ± 22.280	.023	981
Diastolic Blood Pressure	89.20 ± 11.312	89.25 ± 7.598	.766	449
Pulse Rate	80.68 ± 14.264	82.38 ± 15.969	.482	633
Respiration	20.35 ± 2.869	19.23 ± 3.301	1.501	141

$\bar{x} \pm S.D.$ =Arithmetic Mean (\bar{x}) and Std. Dev. (S.D.)

The analysis of this table indicates that there is none statistical significance between study and control study for physical parameter pre-test.

Table (5): Comparison between Study and Control Group at Post test

Physical Parameter	Study Group Mean ± S.D.	Control Group Mean ± S.D.	T test	P Value
Systolic Blood Pressure	140.58 ± 22.280	185.08 ± 14.394	.830	.411
Diastolic Blood Pressure	84.48 ± 8.174	87.35 ± 9.096	1.578	.123
Pulse Rate	72.00± 14.653	81.10 ± 11.869	3.209	.003
Respiration	18.35 ± 2.968	20.78 ± 4.179	2.451	.019

$\bar{x} \pm S.D.$ =Arithmetic Mean (\bar{x}) and Std. Dev. (S.D.)

This table show statistical significance between Study and Control Group for physical parameter at post test for pulse rate and respiration at p value (0.003) and respiration (0.019).

Table (6): Association between Age and Effectiveness of video

Age (Years)	Effectiveness of Educational Video		
	No.	Pre-test Mean ± S.D.	Posttest Mean ± S.D.
29-38	5	2.20 ± 0.447	2.00 ± 0.447
40-49	9	2.22 ± 0.441	2.20 ± 0.000
50 years and more	26	2.08 ± 0.392	1.96 ± 0.196
Total	40	2.13 ± 0.404	2.00 ± 0.226
		F = 0.517 d.f.=39 P = 0.475	F = 2.504 d.f.= 39 P = 0.007

=Arithmetic Mean (\bar{x}) and Std. Dev. (S.D.), No. = Number of frequencies, F = F-test, d.f = degree of freedom, P = probability value.

This table shows that there is statistical significant association between patient's age and effectiveness of educational video at posttest (p value > 0.05). When analyzed by Leven's test and ANOVA.

Table (7): Association between Gender and Effectiveness of Educational Video

Effectiveness of Educational Video Gender	No.	Pre-test Mean ± S.D.	Posttest Mean ± S.D.
Male	20	2.20 ± 0.410	1.95 ± 0.224
Female	20	2.05 ± 0.396	2.05 ± 0.224
Total	40	2.13 ± 0.404	2.00 ± 0.226
		F = 1.390 d.f. = 39 P = 0.176	F = 2.000 d.f. = 39 P = 0.104

$\bar{x} \mp S.D.$ = Arithmetic Mean (\bar{x}) and Std. Dev. (S.D.), No. = Number of frequencies, F = F-test, d.f = degree of freedom, P = probability value.

This table shows that there is no statistical significant association between patient's gender and effectiveness of educational video at pre and posttest when analyzed by Leven's test and ANOVA.

Table (8): Association between Education Level and Effectiveness of Video Educational Program

Effectiveness of Educational Video Level of Education	No.	Pre-test Mean ± S.D.	Post test Mean ± S.D.
Not read and write	16	1.94 ± 0.250	2.00 ± 0.059
Read and write	3	2.00 ± 0.314	2.59 ± 0.019
Primary School	16	± 0.250 1.94	2.00 ± 0.059
Secondary School	3	2.00 ± 0.177	2.76 ± 0.065
Diploma, Bachelor and Higher Education	2	2.50 ± 0.707	2.46 ± 0.229
Total	40	2.13 ± 0.404	2.00 ± 0.226
		F = 0.767 d.f. = 39 P = 0.192	F = 2.100 d.f. = 39 P = 0.05

$\bar{x} \mp S.D.$ = Arithmetic Mean (\bar{x}) and Std. Dev. (S.D.), No. = Number of frequencies, F = F-test, d.f = degree of freedom, P = probability value.

This table shows that there is statistical significant association between patient's education level and effectiveness of educational video at posttest (p value > 0.05), when analyzed by Leven's test and ANOVA.

V. Discussion

Part-I: Discussion of the Socio-Demographic Characteristics Related to the Diagnostic Coronary Catheterization (Study and Control group): The results of the demographical data which presented in table (4-1) show that the higher percentage of the sample are 45 (56.25%) between (50-more) age group. This result agrees with Samira, et al.,⁽⁹⁾ that show the majority of study sample with ranged from (55-65) years the demographic data for patients undergoing diagnostic cardiac catheterization procedures, this is because older age as risk factor for coronary heart disease (Aging is associated with increased vulnerability to endothelial injury and decreased endothelial repair⁽¹⁰⁾). Concerning the educational levels and marital status, "individual with low educational level, low economic status and married were more label to expose to accidental cardiac disorder"⁽¹¹⁾, this agree with our finding which pointed on high percentage (37.5%) of the sample were within not read and write. At same line Abdollahzadeh, et al⁽¹²⁾ They found that higher percentage of participant were not read and write (Illiterate).

Regarding marital status (73.75%) were married, and this agrees with Ali,⁽¹³⁾ who reported higher percentage of study sample were married, and the majority of the study sample with monthly income is a fairly adequate monthly income. Regarding the occupation status, results indicated that a highest percentage of the study sample are housewives (43.75%), and this similar to results that conducted by Ali,⁽¹³⁾ who present that highest percentage (35.8%) of sample were housewives. In regarding to residency, the whole participant (73.75%) were city resident this result is supported by Elsay et al.,⁽¹⁴⁾ found that more than three quarters 40 (80%) from urban.

Part-II: Discussion of the Distribution of the (80) Diagnostic Catheterization Patients According to the Medical Sheet Information: The spread of cardiovascular risk factors was diabetes, smoking and hypertension⁽¹⁵⁾. In our study as presented in table (4-2) hypertension 32 (42.5%), diabetes mellitus 6 (7.5%), and 24(30%) has both diabetes and hypertension. As regarding smoking 14 (17.5 %) smoker, and 26(32.5) leave smoking. This agrees with Gallagher et al.,⁽⁵⁾ that found 63% having hypertension, 19% diabetes and 8% smokers.

Part- III: Discussion of Effectiveness of an Educational video intervention on level of anxiety for patients prior to diagnostic coronary catheterization (Study and Control group) at Pre and Posttest: The education has been significantly increasing patients' awareness and satisfaction Abdollahzadeh et al.,⁽¹²⁾. Furthermore, Harkness et al⁽¹⁵⁾ confirmed that giving early education to patients while waiting cardiac catheterization decreases anxiety and increases health related quality of life. Also, Elsay et al.,⁽¹⁴⁾, showed that the information provided to patients is very important aspect of care, lesser amount of information leading to greater anxiety, also they found, total knowledge score unsatisfied in all patient pre intervention compared to post intervention.⁽¹⁶⁾, added that the main factors that increase levels of anxiety before the procedure were lack of information and unsatisfactory orientation, and increase waiting time before the procedure. So early preparation, giving patients' information before the procedure were very important to decrease levels of anxiety. These findings support the results of our study, there were a correlation between the knowledge by educational video and anxiety. The results of table (4-3) show that anxiety level prior to CATH for study and control group at (posttest) by Frequency and Mean of Score and this results indicate the effect of educational video on level of anxiety for patients prior to diagnostic coronary CATH on study group compared with control group, on same line this results is supported by study done by Jamshidi et al.,⁽¹⁷⁾ who reported that the anxiety in experimental group decreased with watching video but in control group increased before CATH.

As previously reported by many researchers, showed that the video information could be more effective than verbal information and decreases preoperative anxiety and video information not only decreases the preoperative level of anxiety, but can also improve the tolerability to invasive procedures Ruffinengo et al,⁽¹⁸⁾.

Video information in contrast with verbal information can effectively reduce anxiety of patients before coronary CATH indicates that video information can be introduced by nurses and physicians during pre-procedure care and that this intervention can be of benefit before procedure. On the other hand, the higher anxiety levels in the control group might be related to the type of education received from the usual care provided to them through brief verbal instructions from nurses and cardiologists. Also, using this educational video significantly affect physiological parameters associated with anxiety. The benefits of educational videos on patients' psychological status are well recognized from the relevant literature, limited knowledge has been developed on the effect of educational video on patients with cardiac diseases.

The significant difference regarding the anxiety levels between the two groups supports the effectiveness of using educational video intervention before CATH, which is reported in previous literature⁽¹⁷⁾⁽¹⁹⁾. This may have occurred because of the knowledge gained from the educational video received prior to CATH. Specifically, the knowledge gained from the educational video further enabled patients in the experimental group to develop a more accurate cognitive expectation about the procedure. Similarly, a low level of anxiety was reported before and after percutaneous coronary intervention (PCI) among patients because of the adequate facilities, orientation, and health education provided to them by the health care members (Eng et al.,⁽²⁰⁾.

Part- IV: Correlation between Demographic data (Age, Gender and Level of Education) of educational video on Catheterization Patients Anxiety Level (Pre-Post, Study and Control Groups): Related to the table (4-6), this table shows that there is statistical significant association between patient's age and effectiveness of educational video at posttest (p value > 0.05) .

Regarding gender the results show the table (4-7) shows that there is no statistical significant association between patient's gender and effectiveness of educational video at pre and posttest. This disagree with other studies reported that female patients had higher levels of anxiety before invasive procedures (Steffenino et al.,⁽²¹⁾. This might be because the simplicity of construction of health education for both gender and the urgent need for them education about diseases and how they occur.

The present study shows that there is Statistical Significant association between patient's education level and effectiveness of educational video at posttest (p value > 0.05) at table (4-8). This may be due to that persons who received good level of education it helps them for better understanding of disease nature, process, consequences, limitation and ways of treatment for this disease.

VI. Conclusions

(1) The educational video developed by the researcher was found to be helpful in decreasing anxiety and enhancing awareness among patients undergoing catheterization. The results showed there was significant decrease in anxiety level in patients undergoing diagnostic catheterization .

(2) An educational video intervention provided at the beginning of the waiting period have a positive impact on patients' anxiety. Considering findings of this study, it can be concluded that education through film by considering patients' native language improve patients' knowledge and reduce anxiety before cardiac catheterization.

VII. Recommendations

As this study is the first of its kind conducted within the Iraqi health institutions. According to the study results the following recommendations were proposed the study can be replicated on large samples to have a wider generalization of findings. A similar study may be conducted to assess the effectiveness of educational video on anxiety level and satisfaction of patients undergoing other invasive procedure, consultation with cardiologists, or surgical operations. Based on the study findings, we suggest that video information could become an important role of nurses and physicians for decreasing anxiety, stress and depression of the patients. Since waiting lists are common in many countries with socialized health care systems, the potential applicability of these findings is widespread.

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