Original Article

Patients' Knowledge Regarding Cardiac Catheterization at Cardiac Specialty Hospital in Slemani City of Iraq: A Descriptive Study

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Abstract

Background: Coronary heart disease refers to different condition of failing circulation of the heart and includes myocardial infarction (MI). Cardiac catheterization (CC) is the inserting of a thin, hollow catheter into a chamber or vessel; it is done for diagnostic and intervention purposes. Death charge from coronary heart disease have decreased in recent decennium, however coronary heart disease is still a major cause of morbidity and mortality worldwide especially in developed country. In this study, we assessed the patients' knowledge regarding CC.
Materials and Methods: A descriptive study was conducted with a purposive sample of 250 patients were selected and included from Cardiac Specialty Hospital in Slemani City, Iraq. This study was carried out in between November 2017 and October 2018. A self-conductive questionnaire was used for data collection.
Results: Totally 250 patients were included in this study. Among 250 patients, 176 (70.4%) were males and 74 (29.6%) females. The validity of questionnaire was estimated through a panel of experts related to the field of the study, and its reliability was determined through a pilot study which was carried out on 105 patients who were selected purposively from the patient were admitted those who were undergone the procedure at Cardiac Specialty Hospital in Slemani city. The majority of the participants were Kurdish 212 (84.8%) and more than a quarter of the patient's age was in group 60 years and above. Among 250 patients, 202 (80.8%) were married and 117 (46.8 %) of study participants were illiterate, 171 (68.4%) of them were unemployed, and 148 (59.2%) were lived in urban area.
Conclusion: Our present study showed that the majority of participants had low level of knowledge regarding CC as well as level of knowledge from post-CC was higher than pre-CC procedure.

Key Words: patients' Knowledge, cardiac catheterization, pre and post cardiac catheterization, Slemani City, Iraq

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Introduction

"Cardiac catheterization (CC) is the inserting of a thin, hollow catheter into a chamber or vessel; it is done for diagnostic and intervention purposes". [1] Death charge from coronary heart disease have decreased in recent decennium, however coronary heart disease is still a major cause of morbidity and mortality worldwide especially in developed country. Coronary heart disease refers to different condition of failing circulation of the heart and includes myocardial infarction (MI), which is the one coronary heart disease that causes most deaths. [2] Functions of the circulatory system and the heart are adversely affected by cardiovascular diseases such as coronary thrombosis artery disease, cerebrovascular disease and peripheral vascular disease but coronary artery disease is a multifactorial disease in the heart and Its occurrence depends on the bed cover of risk element, therefore, the more frequent risk factors for atherosclerosis has a largest morbidity and mortality that occur by this disease. [3]

Percutaneous coronary intervention (PCI) is the gold methods for treating coronary artery disease and it is recommended to treat ST-segment elevation myocardial infarction (STEMI) and unstable or chronic stable angina. [4] Percutaneous coronary intervention is a non-surgical intervention and referred to coronary angioplasty that done for manage the narrowing of the coronary artery branches of the heart resulting from accumulation of cholesterol plaques, this procedure must be done by cardiac specialist. [5] This process

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must be done in emergent, lanned or rescue condition for revascularization strategy for coronary artery disease. [6] Opening the blocked artery of the heart lead to improving blood flow for the heart tissue and absence of chest pain, reoccurring myocardial infarction also sudden death may be prevented. [7] Coronary angioplasty is relatively considered as a low-risk procedure and has a rapid recovery, also it is useful to improve prognosis, relieve symptoms, decrease ischemic events, and improve functional capacity in the heart. [8] An expert nursing care delivered within an interdisciplinary team must be present in the cardiac catheterization unit during performing percutaneous coronary intervention. [9] Monitoring vital signs, the sheath entrance site, peripheral pulses, capillary refill and chest pain must be measured by the nurses because they have an important role in this procedure. [10] All these observations are done while maintaining a patient's sufficient periods of rest, providing required perfusions of drugs, and monitoring the patient for their amounts of fluid intake and output. [11]

Hemodynamic instability in response to invasive procedures is a consequence of patients' experience of anxiety and stress without any previous knowledge about it. The patients report feelings of discomfort and intolerance due to prolonged bed rest in a fixed position after the procedure. [12] Nurses play a critical and important role in promotion of the patient's information before and after the procedure. [13] Psychological problems may decreased by Patient's knowledge about the procedure. [14] Giving verbal information for the patients by nurses and physicians is considered as common routine useful way for educating the client's pre coronary angioplasty in many hospitals and this meaningfully leads to decrease the nursing work load, and also elevate the patients and nurses' gratification, rest and forgiveness that related to the procedure. [15] However occurrence some complication by coronary angioplasty such as seudoaneurysm, hematoma, bleeding and arterial occlusion, that as recorded not reach to more than 14% but in general it is a safe procedure. [16] Many studies recorded that age, gender and body weight are considered as a common predisposing factor for vascular complications. [17] Furthermore, types of medications that administered during the coronary angioplasty and chronic disease elevate the risk of vascular complications. [18] Some patient during coronary angioplasty has a chance of a disaster situation because experience life-threatening complications however most of them are discharged successfully without any complications within a day. Managing complication need trained nurses to use critical assessment skills, and detect any vascular problem and apply suitable interventions. [19] In our study the main objectives were to describe socio-demographic characteristics of the study sample; to find out level of patients' knowledge regarding cardiac catheterization procedure; to find out the association between level of knowledge and some socio-demographic characteristics such as age groups, gender, nationality, income, level of education, residential area and occupation status of the study sample and to find out differences between patient's level of knowledge in pre and post cardiac catheterization procedure.

Materials and Methods:

This descriptive cross sectional-based study was carried out at Cardiac specialty Hospital in Slemani City for the period of about eight months from November 14th, 2017 to October 20th, 2018. The main sample of this study involved 250 patients which admitted there. A self-conductive questionnaire was used for data collection was used to record information about the patients such as: socio demographic data, which includes (patient's age groups, gender, marital status, nationality, monthly income, level of educational, residential area). And some question regarding cardiac catheterization (box- 1). Permission was taken from the Slemani Directorate of Health to carry out this study at the Slemani Cardiac Specialty Hospital in Slemani city. A 21 points scale was used to assess the knowledge of patients about the 21 questions or recommendations that the patient must know before undergoing the procedure. One score was given for each correct answer, so the total was 21 scores. It was divided into three equal parts. Accordingly, those who scored 1–7 were considered as having low level of knowledge, those who scored 8-14 were considered as having medium level of knowledge, and those scored 15–21 were considered as having high level of knowledge. Data were enter in Microsoft excel 2010 [Microsoft Ltd., USA] and were analyzed by using Statistical Package for Social Sciences (SPSS, version 22.0, IBM, USA). Chi-Square test was used to find association between proportions. Fisher's exact test was used when the expected count of more than 20% of the cells of the table was less than 5. A p-value <0.05 was considered as statistically significant.

Results:

Two hundred fifty patients scheduled for cardiac catheterization had been included in our present study. Their mean age (Mean $\pm$ SD) was 59.54±10.56 years, ranging from 30 to 90 years. The median was 60 years. It is evident that more than two thirds of patients aged 50-69 years, 15.6% aged less than 50 years, and 15.2% aged 70 years or older than 70. More than two thirds (70.4%) were males, and the male: female ratio was 2.4: 1. **Table –1** shows also that the majority of the patients (84.8%) were Kurdish, and 80.8% were married. Regarding the income, 63.6% believe that their income was not sufficient for their daily needs, and around half (46.8%) of the patients were illiterate. It is evident in the same table that 68.4% were unemployed (or housewives), and only 16.8% were employed. Finally, the table shows that 59.2% were living in urban areas. More than half (52%) of the studied sample had low level of knowledge, 47.2% had medium level of knowledge, and only two patients (0.8%) had high level of knowledge as shown in **Figure–1**. Results showed that the mean knowledge score was 7.2, ranging from 1 to 16. The median knowledge was found as 7.

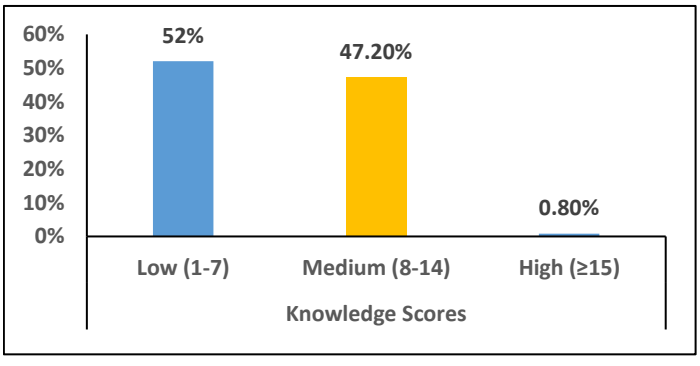
Nearly most of 99.6% the patients believe that the information regarding cardiac catheterization are necessary for them, but on the contrary, the proportions of patients who had knowledge about this information was low. More than 67.6% of the patients had knowledge about the pain during the procedure, 58.4% of the patients knew that they would be awake during the procedure, and 57.2% had information about the area of insertion of the cardiac catheter. Less than 50% of the patients had information about the other items presented in **Table–2.** It is evident in the table that small proportion of the patients had information 'when to eat and drink after the procedure', 'when to take a shower', 'the period of rest after the procedure', 'when to resume heavy physical activities including sexual intercourse' in addition to the other information mentioned in the table.

In **Table –3,** two patients with high knowledge score were combined with those of medium knowledge for the sake of the statistical analysis.

Table 1. Socio-demographic characteristics of the patients (N = 250)

Socio-demographic characteristics	Number of Patients (n)	Percentage
Age Groups (in years)		
< 50	39	15.6
50-59	82	32.8
60-69	91	36.4
≥ 70	38	15.2
Gender		
Male	176	70.4
Female	74	29.6
Nationality		
Kurdish	212	84.8
Arabic	36	14.4
Others	2	0.8
Marital status		
Single	5	2.0
Married	202	80.8
Divorced	3	1.2
Widowed	40	16.0
Monthly Income		
Sufficient	16	6.4
Barely sufficient	75	30.0
Insufficient	159	63.6
Educational status		
Illiterate	117	46.8
Primary	56	22.4
Secondary	49	19.6
Diploma	17	6.8
Degree and above	11	4.4
Occupation Status		
Employed	42	16.8
Unemployed	171	68.4
Retired	37	14.8
Residence Areas		
Urban	148	59.2
Semi Urban	69	27.6
Rural	33	13.2

Figure: 1 Distribution of the patients' levels of knowledge



analysis. Lower the age, less proportions of medium knowledge, but the differences were not significant with p-value=0.144 (p>0.05). It is evident in the table that 49.4% of males had medium knowledge compared with 44.6% of females had no significant with p=0.485 (>0.05). Regarding nationality, the highest proportion of medium knowledge was among the Arabs (63.9%) but the differences were not significant with p=0.066 (>0.05). No significant association was detected between marital status and knowledge with p=0.272 (>0.05). The highest proportion of knowledge was among those with barely sufficient income (60%), and the lowest (42.1%) was among those with insufficient income with p=0.038 (<0.05). Significant with p=0.009 association was detected between knowledge and educational level, but the distribution was not consistent where the highest proportions of medium knowledge was among graduates of primary and secondary schools (62.5%, and 59.2% respectively), while it was 54.5% among MSc holders. No significant association was detected between occupation and the level of knowledge with p-value=0.613. Regarding residency, 54.1% of those living in urban areas had medium knowledge, compared with 44.9% and 27.3% among those living in suburban and rural areas respectively and the test showed significant with p-value=0.017 (<0.05).

More than half (60.5%) of the studied sample had low level of knowledge, (39.5%) had medium level of knowledge, but only two patients had high level of knowledge (1.6), (54.6%) of them had a medium level and (43.7%) had a low level of knowledge. Results showed that the post cardiac catheterization knowledge was more than pre cardiac catheterization as shown in **Figure–2.**

Discussion:

Regarding socio-demographic characteristics of the study sample; table one showed that most of the participants' age ranged between sixty years and above; most of them were male, majority of them were married and nearly a quarter of the patients had insufficient income and unemployed. More than half of them were illiterate and lived in urban area. The result regarding age, gender, marital status is agreed with the study done in Australia 2009 which mentioned that the number of female patients with coronary heart disease is generally much lower than male. [20] Regarding level of knowledge figure one in our results indicated that more than half of the participants had a low level of knowledge, nearly half of them had a moderate level but Alarmingly indicated that only two patients has a high level of knowledge, The results agree with the study done in Pakistan which showed that majority of the patients who were booked for cardiac catheterization were unable to properly describe the procedure. These high points that the cardiac patients are not well alert with coronary heart disease. Also finding of the study demonstrate that more than half of the participants had no any information about these questions which asked about; information regarding cardiac catheterization, taking medications such as Aspirin, Plavix before the procedure, cardiac catheterization therapeutic procedure for opening the narrowing of coronary artery, about time that should take rest after the procedure and time of avoiding oral intake after the procedure, but Worryingly the results indicated that the majority of the patients had no any information about these questions; indication of existing some investigations such as: blood urea, serum creatinine, time of taking a shower after the procedure, avoid doing heavy activities after the procedure especially sexual intercourse, complications of cardiac catheterization, such as bruising, bleeding, and allergic reactions to the dye or medications, theaim and amount of drinking clear fluid preferably water after the process.

Table 2. Distribution of patients' knowledge about the regulations and guidelines (N = 250)

Knowledge Questions	I don't know	Uncertain	I know
	n (%)	n (%)	n (%)
Do you have any information about cardiac catheterization?	148 (59.2)	85 (34.0)	17 (6.8)
Do you know checking vital signs is necessary before the procedure?	98 (39.2)	54 (21.6)	98 (39.2)
Do you know the ECG need before the procedure?	93 (37.2)	47 (18.8)	110 (44.0)
Do you know about continuation or stoppage of your medications before the procedure?	110 (44.0)	54 (21.6)	86 (34.4)
Do you have information about taking medications such as Aspirin, Plavix before the procedure?	167 (66.8)	25 (10.0)	58 (23.2)
Do you understand that Cardiac catheterization is a diagnostic procedure for coronary artery occlusion?	124 (49.6)	10 (4.0)	116 (46.4)
Do you know that cardiac catheterization is a therapeutic procedure for opening the narrowing of coronary artery?	139 (55.6)	10 (4.0)	101 (40.4)
Do you know that you will be awake during the procedure?	71 (28.4)	33 (13.2)	146 (58.4)
Do you know you should do these investigations such as (blood urea, serum creatinine, Hepatitis and HIV before procedure and there aims?	223 (89.2)	21 (8.4)	6 (2.4)
Do you have information about existing pain during cardiac catheterization?	70 (28.0)	11 (4.4)	169 (67.6)
Do you know when you can take a shower after the procedure?	218 (87.2)	12 (4.8)	20 (8.0)
Do you know for how long you should take rest after the procedure?	135 (54.0)	44 (17.6)	71 (28.4)
Do you know for how long you should avoid oral intake after the procedure?	155 (62.0)	60 (24.0)	35 (14.0)
Do you know for how long you should avoid doing heavy activities after the procedure especially sexual intercourse?	202 (80.8)	30 (12.0)	18 (7.2)
Do you know any complications of cardiac catheterization, such as bruising, bleeding, heart attack and allergic reactions to the dye or medication?	207 (82.8)	38 (15.2)	5 (2.0)
Do you know the procedure avoided if you have severe uncontrolled hypertension?	94 (37.6)	54 (21.6)	102 (40.8)
Do you believe that the information regarding cardiac catheterization are necessary for you?	0 (0)	1 (0.4)	249 (99.6)
Do you know the aim and amount of clear fluid preferably water after cardiac catheterization?	234 (93.6)	10 (4.0)	6 (2.4)
Do you know the cardiologist administer mild sedative medication before the procedure?	95 (38.0)	49 (19.6)	106 (42.4)
Do you know the area for performing a cardiac catheterization insertion in the human body?	28 (11.2)	79 (31.6)	143 (57.2)

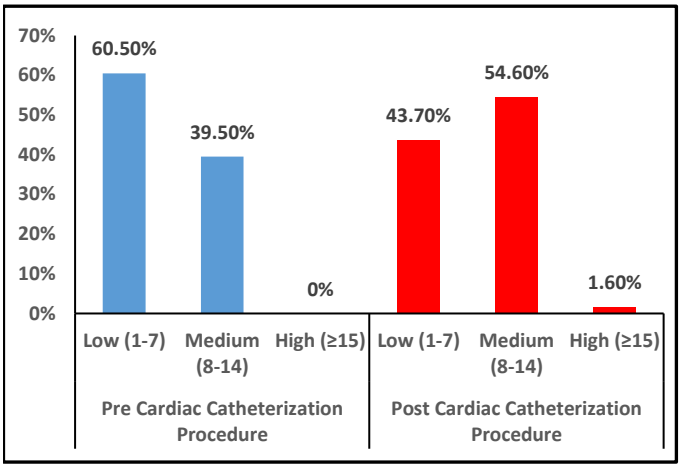
Table: 3 Association between severity and demographic variables

Variables	High		Medium and Low		Total		p-value
	n 130	% 52.0	n 120	% 48.0	N 250	% 100	
Age Groups (in Years)							
< 50	17	43.6	22	56.4	39	100.0	0.144
50 – 59	41	50.0	41	50.0	82	100.0	
60 – 69	46	50.5	45	49.5	91	100.0	
≥ 70	26	68.4	12	31.6	38	100.0	
Gender							
Male	89	50.6	87	49.4	176	100.0	0.485
Female	41	55.4	33	44.6	74	100.0	
Nationality							
Kurdish	116	54.7	96	45.3	212	100.0	0.066
Arabic	13	36.1	23	63.9	36	100.0	
Others	1	50.0	1	50.0	2	100.0	
Marital status							
Single	3	60.0	2	40.0	5	100.0	0.272
Married	100	49.5	102	50.5	202	100.0	
Divorced	1	33.3	2	67.7	3	100.0	
Widowed	26	65.0	14	35.0	40	100.0	
Income							
Sufficient	8	50.0	8	50.0	16	100.0	**0.038**
Barley sufficient	30	40.0	45	60.0	75	100.0	
Insufficient	92	57.9	67	42.1	159	100.0	
Educational Status							
Illiterate	74	63.2	43	36.8	117	100.0	**0.009**
Primary	21	37.5	35	62.5	56	100.0	
Secondary	20	40.8	29	59.2	49	100.0	
Diploma	10	58.8	7	41.2	17	100.0	
B.Sc. &more	5	45.5	6	54.5	11	100.0	
Occupation Status							
Employed	21	50.0	21	50.0	42	100.0	0.613
Unemployed	87	50.9	84	49.1	171	100.0	
Retired	22	59.5	15	40.5	37	100.0	
Residence Areas							
Urban	68	45.9	80	54.1	148	100.0	**0.017**
Sub-urban	38	55.1	31	44.9	69	100.0	
Rural	24	72.7	9	27.3	33	100.0	

Bolded p-value < 0.05 Significant

This result related to many reasons; first of all we have to say that the cardiac specialty hospital in Slemani prepared most of this information by handout for every patients but as a result showed than two thirds of patients were old age and nearly half of them were illiterate. So, they cannot read the instructions and their relative did not read for them, or some patient obtain information from physician but forget it furthermore we have a many patient which planned cardiac

Figure: 2 Differences of pre and post cardiac catheterization procedure with patients' level of knowledge



catheterization and angioplasty and our nurses has no enough time for explain pre and post procedure for the patients however explaining and understanding patients regarding the procedure is considered as the heart of the science of nursing and it is a comprehensive ideal of caring [21]. **Table-3** showed that the lower the age, the less the proportions of medium knowledge, but the differences were not significant (p= 0.144) the reason of this result related to performing this procedure previously.

There are very highly significant association with p–value=0.009 (p<0.001) between knowledge and educational level, but the spreading was not regular where the highest proportions of medium knowledge was among graduates of primary and secondary schools while more than of half of them was among MSc holders. No significant association was discovered between occupation and the level of knowledge with p–value=0.613 (p>0.05). Concerning residency, more than half of those living in urban areas had medium knowledge, matched with nearly half and nearly a quarter among those living in suburban and rural areas respectively p=0.017 (<0.05). The consciousness regarding post angioplasty complications and factors that raises chance of restenosis will increase clients'obedience to drugs and will also decrease morbidity and mortality rates among coronary heart disease patients [22].

There are only two patients had a high level of knowledge, more than half of them had a medium level and nearly half of them had a low level of knowledge in post-CC procedure but in pre-CC procedure more than half of the participants had low level of knowledge, less than half had medium level of knowledge. Results showed that the post cardiac catheterization knowledge was more than pre cardiac catheterization. This result related to understanding the procedure after doing it and they sow and heard many thing during the procedure.

Conclusion:

Our study finding results showed that more than half of the participants had a low level of knowledge but surprisingly indicated

that only two patients has a high level of knowledge regarding pre and post cardiac catheterization. Most of participants were believed that the information regarding cardiac catheterization is necessary for them. Nevertheless, this outcomes could be of great help to higher specialists as we have recognized subset of population that specially needs to be directed through alertness programs as well as suggest that urgent and Targeted awareness programs must be introduced, so a special person must be selected to explain full cardiac catheterization procedure for every patient who planned this process. Also more than half of them had information about the area for performing a cardiac catheterization insertion in the human body. The study demonstrated that the lower the age, the less the proportions of medium knowledge, but there is no differences between them.

Implications for practice:

1. Every physician must be explain the patients regarding pre and post CC in his clinic before the procedure.
2. Nurses should be given more opportunities to participate symposia regarding coronary heart disease to increase ability of advice and giving instruction for patients regarding CC process, and put a special person for that goal.
3. This field needs to much more scientific research to provide adequate knowledge for patients during preparation of patients regarding cardiac catheterization.

Authors' Contributions: BO, NHA: Study conception and design; BO: Data collection; BO and NHA: data analysis, draft manuscript preparation. BO, NHA and DDF authors reviewed the results and approved the final version of the manuscript.

Here, BO – Bayan Omar; NHA – Nian Hamaamin Ahmed; and DDF – Dlawer Dhufr Farhad

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