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Experiences of warfarin use among cardiac valve-replaced patients in Iran

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ABSTRACT

Aims: One of the most common cardiac surgeries is valve replacement. All cardiac valve-replaced patients need to use warfarin during their life in order to reduce the risk of valvular thrombosis.There were some reports about various problems of using warfarin by considering care conditions, but there was no comprehensive study based on patients' experiences. The present study was carried out with the aim of "explaining the experiences of cardiac valve-replaced patients about using warfarin".

Methods: This study was conducted with a qualitative research approach and conventional content analysis in 2013. The Participants were 10 cardiac valve-replaced patients who had experiences of different time periods in Tehran and Kashan therapeutic centers and outpatients who had the experience of living with metal cardiac valves. Data collection was performed through semi-structured interview and purposive sampling and it continued until data saturation. Data analysis had been done continually and concurrently with data collection and it was performed through a comparative method.

Results: 479 codes were extracted from deep and rich descriptions of the participants. There were two main themes during data analysis process including: concern and fear of changes in the International Normalized Ratio (INR) and the struggle for the correct use of warfarin and adjustment of INR, the first theme was fear and concern about warfarin use which was consisted of five subcategories; concern on the correct use of warfarin; concern on health cares, warfarin side effects; concern on pregnancy and dental care, the second theme was effort for correct use of warfarin and regulating its use which was consisted of five subcategories: perceiving the necessity of warfarin use, adherence to the physician, self-care, physicians' recommendations and health care and educational requirements for warfarin use.

Conclusions: Cardiac valve-replaced patients have a permanent fear and concern during thetime of warfarin use and they try to reduce it with the correct use of warfarin and the adjustment of INR. It is necessary to help them to reduce such concerns through actual knowledge of the patients, providing post-discharge care and establishing the society for cardiac valve-replaced patients and the family.

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1. Introduction

Nowadays after about 50 years of cardiac surgery, it is among the most common surgeries and about 1-1.5 million cardiac surgeries is annually performing all over the world. Common problems after valve-replacement includes: atrial fibrillation, bleeding and thrombosis especially cerebral venous thrombosis and hematologic, gastrointestinal and urogenital complications which can lead to increase of death and dangerous potential complications [1].

According to the report of Krotke et al. in 2000, 98000 patients with cardiac valve diseases in America are discharging from the hospitals annually and care after cardiac valve-replacement is a long process and it needs knowledge, adaptation, hemodynamic performance improvement, and mental and social interactions of the patients [2]. These patients need lifelong care after cardiac valve-replacement, all of them are in the risk of thromboembolismand they have to use anticoagulant drugpermanently [3].

Annual risk of Thromboembolism complications in patients who use warfarin is about 1% and it is about 4%in patients who don't use anticoagulants [4] according to the recommendation of America Heart Associationand Heart Centre of America, the amount of INR for patients who have mechanical aortic valve is 2-3 and for Mitral it is 2.5-3.5 [5,6].

There is not enough and necessary educations in many of the treatment centersand also there is no follow-up system in treatment of these patients. Menendez showed that late complications of valve replacement include: thromboembolism, bleeding due to anticoagulant drugs, prosthesis structural dysfunction and infective endocarditis [7]. Chan showed that on the whole, permanent use of warfarin is along with better outcomes for mother but at this time abortion is also common[8]. Cortrufo et al., showed that in women who had valve-replacement, the level of abortion had been increased 32% stillbirth 7% and the damages to the embryo 6% following warfarin use [9]. Christensen et al. showed that in 78% of the patients who performed self-care and 61% of the patients in the conventional management INR was in normal therapeutic range [10].

It has been reported that more than half of the patients did not use the right dose of their drugs and factors such as knowledge of the role of drug, side effects, interaction with the digested food, and simultaneous use of other drugs and also lifestyle influenced the effects and complications of this drug [11, 12]. Also some medical herbs like Achillea millefolium Cirsium vulgare and Urtica dioica decrease INR [10, 13]. Patients who use ginseng suffer from drop of INR from 3.1 to 1.5 and after discontinuation of ginseng, INR was increased again and reached to 3.3 [14]. The usage of some herbs like; garlic, celery, turmeric, ginger, licorice, chamomile, etc. increase INR and bleeding [11, 12, 14].

Increasing consumption of medicinal herbs in warfarin users encounters them with many problems and complications [14]. Fetal complications are related to warfarin dose, more than 5mg dose exacerbated fetal complications [15]. Aspirin with low dose along with warfarin is recommended for the risk of thromboembolic emergence [16]. Warfarin dose needs to be regulated to put INR level in the therapeutic range and physicians are not able to choose a dose of warfarin to reduce fetal outcomes and complications [17-19]. Physicians who take care of pregnant women with artificial valve are actually taking care of two patients, in some societies the pregnant woman may prefer her embryo's health to her health and this issue is in contrast with the physicians' view, the safest choice is not to be pregnant and the most dangerous situation is lack of using anticoagulation [20].

From the other side, patients and their relatives are not given complete and comprehensive information. Early discharge of the patients from Intensve Care Unit (ICU) can be dangerous [21], many patients are dead before

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tasting the enjoy of science and technology progress, and it is because of the problem in taking care through warfarin use after valve-replacement. Most of the Patients achieve care from other sources. Also comments of the articles indicate scientific gaps in this regard. Considering Iranian cultural, social and economic context in epistemology and domain ontology areas of nursing knowledge towards patients can lead to the development of designing nursing care based on their real needs.

Studies in this regard are the result of researchers' interpretation and health service providers' interpretation and they have been assessed through quantitative method. There is no report in Iran regarding valve-replacement patients' experience about warfarin use and review of the articles indicate scientific gaps in this regard in supporting patients, perhaps the most important reason is that there is less attention to the patients' experiences and their explanations in this regard. Considering them in Iranian cultural, social and economic contextin epistemology and domain ontology areas of nursing knowledge towards patients can lead to the development of designing nursing care based on their real needs. Therefore a qualitative study had been done with the aim of "explaining the experiences of cardiac valve-replacement patients about warfarin use". in order to discover their interactive behaviors with the problems.

2. Methods

Qualitative study had been done by using conventional content analysis in 2013 [22]. Purposive sampling was used in this study. Patients with cardiac valve-replacement who used warfarin were the samples of the study. Often two interviews had been done with every one of the patients that about 18 interviews had been done with 10 people, simultaneous analysis was done after every deep and semi-structured interview. Questions of the study included: explain your experiences about using warfarin? How do you perform in doing PT and INR? And then the interview continued based on the aims. For more clarification, exploration questions were used including: can you explain more? What did you mean by this? Can you give an example? The interview was done during 45 to 60 minutes in a relaxed environment. Sampling continued until data saturation. The interview was written on the paper word by word by using MP4, data analysis was continued simultaneously during the sampling.

The next phase was coding, which had been done by the help of MAXQDA V10 software, by reading the text of the interview, important points were extracted and coded. The third phase was analysis by using the process that in this phase, the texts were compressed and categorized inductively and unrelated information was removed. In order to be sure about the accuracy of the findings of the study four suggested criteria were considered including: validity, reliability, portability, verifiability which was considered by Carpenter and Streubert [23].

The researcher by the help of reviewing handwritten notes of the participants and reviewing of the research team and colleague could determine the validity of data, in order to be sure of portability, it has been tried to provide the possibility of continuing the research by others through clear, exact and purposeful explanation of the research process and the done activities in the course of the study. In order to strength verifiability, text of some interviews, codes and extracted categories were given to some co-researchers who were familiar with analysis method of qualitative researches and were not present in the research and an appropriate agreement was achieved on them. The study was confirmed in the ethics committee of Tarbiat Modares University and Medical Sciences University of Kashan, also ethical considerations were provided by taking written and informed consent from the participants and they were free in cancelling their participation.

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Patients had the experience of using warfarin from 1 week to 20 years. 7 patients were women and 3 of them were men and all of them were satisfied and volunteered for participating in the study. This article is a part of cardiac valve-replaced patients' experiences, which had been done in the form of nursing Ph.D dissertation of Tarbiat Modarres University.

3. Results

Four-hundred senenty nine initial codes were extracted from rich and deep descriptions of the participants. These codes after several reviews were summarized and they were categorized based on similarity and proportionality. Themes according to their nature were named conceptually and abstractly including: fear and concern of INR fluctuation, and effort for correct use of warfarin and regulating INR which indicate patients' experience and understanding dimensions of using warfarin and sources that patients' concern was achieved from them.

the first theme is fear and concern on correct use of warfarin which includes: concern on accurate eating of warfarin, concern ontherapeutic cares, warfarin complications, concern on pregnancy and dental services, concern on correct eating of warfarin includes three subcategories; concern on in time eating of warfarin, concern on physicians and INR fluctuation, these concerns include: concern on forgetting and not eating the drug, concern on eating too much of the drug, to decrease or increase warfarin and interference of other drugs with warfarin, some patients are always worried about forgetting to use warfarin or to eat too much of that, they are worried about consumption and INR fluctuation:

"I eat my warfarin at 6 o'clock and sometimes I doubt and I think weather I ate or not, sometimes I eat again and sometimes I don't eat and I wait to see what happens". (patient 9 with three years of Mitral valve-replacement).

This problem is more important when the patient is pregnant, she is worried of herself and the embryo or when the patient is simultaneously suffering from another disease which needs another drug and perhaps it interferes with warfarin:

"I had cold many times during this, the physicians gave me antibiotic, every time that I ate it my PT was disturbed and it sent me to hospital, if it is bad why it is given and if it is necessary at least we have to be educated to not live with this concern and difficulty". (patient 7, 67 years old, Mitral valve–replacement).

Another concern is lack of access to the physicians, wrong report of the physicians, and fear and distrust to physicians, but laboratory wrong report and contradiction of the physicians' view exacerbate this concern:

"last week my INR was 12 and I called the doctor, he/she said that you have to have a test the next day early in the morning and bring it for me to see, I went and the doctor saw the test, my INR was 2, and I understood that there was a problem in my test, but I was really afraid and sad till morning". (patient 5, a 55 year-old man, Mitral replacement 6 year ago).

Warfarin users due to the effects that it has on the coagulation system suffer from frequent bleeding of different parts of the body like; nose, skin and other bodily routs:

"my tip of tongue was bleeding, I washed it and I saw that it doesn't stop, it was bleeding for one hour like a fountain, I pressed it with a tissue, I pressed it so much that then my tongue was bruise, I used a box of tissues on that day, then I was forced to go to the hospital". (patient 7).

Concern on pregnancy during warfarin use includes: concern on pregnancy, concern on pregnancy periodand difficult delivery also concern on the medical staff's activity which includes two subcategories: therapeutic activities during pregnancy and delivery and another one is the behavior of therapeutic staff in this period with the patients who use warfarin and heparin:

"I had two unwanted pregnancies after valve-replacementthat one of them was spontaneouslyabortedand I aborted another one with difficulty, it was closed to kill me too, I

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was infected and I was hospitalized for two weeks, then I was ok. I went to a midwife and she put IUD for me, I was infected after 5-6 months, my IUD was taken off and they reprimanded me a lot". (patient 10).

Some patients' husbands attempted vasectomy in order to solve this problem, which is not accepted by families in Iran, it is mostly done in privacy and patients prevent talking about it, so they are worried about their family and relatives' blame. One of the problems of the patients is difficulty during pregnancy and medical staff's activity in this time:

"Sometimes I say to my children: do you know how hard I delivered you to this world, you can't compare my 9-months pregnancy with other women, your birth was very hard for me". (patient 4) sometimes this discomfort is very much that even the doctors are sad by hearing that these patients are pregnant. "When I showed the test to the doctor which showed that I was pregnant, the heart doctor stood up, he/she was sad, I said: "what's the matter". he/she said: "I am crazy because of you, wasn't it enough to have lots of problems? Now you are pregnant again?" (patient 4, with 23 years ofmarriage). Pregnancy is along with fear, anxiety and many complications in these people and if they do not care appropriately, it can lead to a delivery with bad ending both for mother and infant: "I was discharged by warfarin, I think that they were indifferent, because they told me many times that when warfarin is started, heparin should not be stopped immediately".

Another concern of the patients is dental services including: concern on taking care of the teeth and treatment of dental problems, lack of doing dental consultation before valve-replacement, unfinished releasing of the work of the tooth by the dentist, concern on bad happening during tooth extraction, frequent referring to the dentist.

These patients usually have hard life with bad teeth and endure the pain because they can't use painkillers like the ordinary people.

"Everywhere did not accept the extraction of my teeth, even it happened to me that the work of my tooth is released unfinished when they were informed and they asked me to go to another place". (patient 1. 45 years old, Aortic 5 years ago).

Most of the time patients' fear is about bad happeningwhich causes the patient to live with bad teeth and does not brush his/her teethwhich causes tooth decay and it shows the necessity of education and prevention.

The second theme is the effort for correct using of warfarin and regulating INR including: understanding the necessity of INR regulation, rely on physician, self-care, physicians' health cares and recommendations and educational needs of the patients who use warfarin. These patients due to the interference of other drugs with warfarin and concern on the fluctuation of INR endure pain to the possible extent and use only limited painkillers which have the least effect on INR:

"I was given calcium tablet.it disturbed my PT, I was forced to stop the calcium tablet. I said that I keep the heart and endure osteoporosis". (patient 6 two valve-replacement, 20 years).

these patients rarely achieve appropriate education, physicians regulate patients' drugs just according to PT or INR "I was given a notebook during this time and every month that we checked our PT we entered into that and they regulated my drugs". (patient 4, Mitral replacement) educations are usually sporadic and tasty and it is for a special case and cares are according to the special problems of the patients. One of the necessities of valve-replacement patients' life is their diet which is less attended:

"In the hospital, I was always waiting that the nurses and doctors tell me what to eat and what to not eat, what should I do, which drugs should I eat and which I should not eat, how long should I eat the drugs, should I let penicillin, eat salt or many other questions". (patient 3, Mitral replacement, 45 days ago). Patient who is not familiar with his/her diet may have noregimen and does not know his/her

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limitations and due to lack of knowledge about his/her cares cause irreparable damages to himself/herself. Patients try to not do works which are harmful for valve health or cause irregularity of INR because they are afraid of problems:

"Last week I went to the dentist, when he/she understood about my surgery, he/she said to me to go to the hospital, she said that it is because you have metal valve and you use warfarin, I can't restore your teeth and they need restoration". (patient 8)

Patients do lots of protections for preventing catching cold "it is about six years that I use flu vaccines annually to not catch a cold and get injection to be forced to use antibiotic which disturbs my PT". (patient 7)

Because of this they constantly check their PT and INR:

"I took some test sheets from the doctor, they were for controlling PT. I go to the hospital to give blood fortnight and sometimes once in a month and I sit for about two hours to take the answer to be assured and then I go home". (patient 9, 55 years old, Mitral replacement, 3 years ago) patients try to lessen their concerns, they refer to physicians, but patients refer to different therapeutic centers for broad happenings during their life, they are always worried about INR fluctuation due to using and discontinuation of warfarin because it is often counted as a threat for their individual and family's life.

4. Discussion

The common theme is the fear of using warfarin. A part of these concerns is due to using warfarin and another part is due to the effect of warfarin on patient's INR and PT, after valve-replacement, all the emphasis is on INR regulation and also the patients saw that when there is fluctuation in their INR, they have lots of problems such as; coagulation or bleeding and sometimes they are hospitalized, and from the other side the medical staff instead of informing the patients, frighten them, because of this permanent concern of the patients is sometimes related to the care forces and a part of their concerns is related to the care conditions like; environment and equipment and access to them, most of them can be corrected and prevented.

There's a study in Turkeywhich explains that although warfarin is a lifesaving drugs for the valve-replaced patients, there may be some mistakes in its treatment and complications that discharge education helps in improving level of information and self-care by focusing on the patients' needs and decreases patients' problems and increases efficiency of the program [24].

Hawley's study showed that positive speaking of nurses with patients leads to patient's confidence, empathy, trust and decreases their concern about lack of knowledge of the disease conditions [25]. Most of the patients complain about not being educated at the time of discharge, after discharge patients are encountered with problems due to using warfarin and the consequence of valve-replacement and suffer from fear and concern. This concern is real and serious. The best way is to prepare the patients for starting the life with warfarin through necessary education and understanding.

One research by Jaarsma explained that supportive education increases patient's self-care, meaning while it decreases symptoms of disease and the problems that cause these symptoms. Decrease of self-care may influence prescribed treatments and causes incompatibility and increase ofplasma level of the stress hormone and heartbeat [26].

There was a qualitative study by Casais et al. with the aim of explaining experiences of open heart surgery which showed that the essence of this phenomenon was wasfriability and it has been achieved through vulnerability themes against real problems of the life, dubious, trust and thank of hoping the chance of good life and satisfaction of changing good lifestyle, friability is not always achieved easily with one look. Studying the ideas and approaches of medical

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team about the conditions of this group of patients is necessary [27].

Also in this study patients suffer from permanent vulnerability after using warfarin specially in the conditions that the life gets fluctuation such as; travel, diet change, pregnancy, using drugs, hospitalization and surgeries which are inevitable during life, when the patients perceive that, they are worried and most of the patients' behaviors is due to coping with the concern.

In the study of Fitzsimons et al. which was done for studying the experience of patients waiting for coronary artery bypass surgery in Northern Ireland, the main themes regarding waiting for treatment included; anxiety, doubt, indecision and chest pain. Six sub-themes included: losing control, disappointment of treatment, anger and inadequate physical activity, low spirit and changes in the family and social relationships, and the most important ones was lack of providing enough information in waiting phase [28].

These concerns are necessary to some extent, but most of the times they are annoying and sometimes patients due to reasoning and lack of correct understanding may use strategies that are not appropriate. Inappropriate care in these patients such as lack of appropriate education or continuing that makes a situation with concern for the patients. There is not any society to support these patients and it increases patients' concerns and distrust. It was shown in Netherland that in INR higher than 6.5 the level of bleeding has been reached from two to seventy five in 100 people [29].

Also in Iran it has been shown that there is strong relationship between increase of INR and bleeding in a way that during nine months the highest bleeding was related to the high and mean level of INR. The kind of diet and drugs such as; garlic and gastrointestinal drugs and painkillers exacerbate INR and vice versa food like soya, oil and cigarette decreases INR [30]. They show the bad situation of care and consequently the emergence of complications and concern in these patients. In this study one of the necessary category of education was related to warfarin use that includesthe following reasons such as: diet, ways to stanch the bleeding, changing job, the way of using the drug and regular test.

There was a study in Sudan regarding phycisians' experience about palliative care of heart failure patients. In this study, heart failure patients need follow-up in three themes including: 1. patients' facing with unpredictable risks 2. Facing difficult conditions regarding continuity or lack of continuity of treatment and medical cares and 3. Necessityof structure reformation. These patients are always facing new, difficult and complicated conditions that need reformation of patients' care structure and follow-up.

Most of the patients describe their disease as a severe experience and crisis in their life and they say that they need a support. Playing a role without changing in the family and the relatives can lead to fear and performing wrong action in facing threat [31].

Another concern of these patients is contraception and delivery that these concerns are due to doubt in contraception and need to sexual advice. Meeting patients' care needs helps them in decreasing their feelings of anxiety, dubious, loneliness, inattention and lack of being understood and helps in more observing of drug directions and decreasing disease symptoms [32].

In the study of Rouzbahani, it was explained that, there is no program and education at the time of discharge in Iran. Consequently negative effects of threat to patients' health were observed as the side effects of the drugs and it causes fear and anxiety in them. If patients' admission, change of their habits and behaviors are noticed, then they are able to take care of themselves [30].

According to the idea of Bedell et al., patients expect cardiologist to talk to them about sexual dysfunction, rapid discovering of this problem is important in preventing low mood and death increase after surgery [33].

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Karlson et al. achieved that because the patients seem strong and powerful, their feeling of anxiety is hidden and they may ask the staff for more attention [34]. Often these patients have valve-replacement when they are young. When they are younger the concerns are related to contraception and pregnancy and when the age is higher the concerns are due to the consequences of treatment with drug and surgery that should be noted [35].

Another subcategory is the concern of pregnancy and delivery that the majority part of this concern is enduring suffers and pain more than the usual pregnancy and delivery. Clark et al. by studying warfarin derivatives showed that using this drug is safe during breastfeeding due to minimal drug transfer into breast milk. [36], Butchart explains that the necessity of education and attention during pregnancy is because of that patient's discomfort of pregnancy increases [37].

Also a dose of warfarin, which makes a range of therapeutic anticoagulant for the mother is ultra-anticoagulant for the embryo. When the infant is anti-coagulant excessively, it makes a high risk of bleeding for the infant and after stopping warfarin, returning of infant's INR to the normal range takes a longer time in compare with the mother [38].

Chan showed that totally among every 25 pregnant women with mechanical artificial heart valve that are treated with oral anti-coagulation drug, one person may suffer from valve-thrombosis, but type and the situation of heart valve are different among the studies [39].

In Iran, it has been observed that there is no education for the patients after heart surgery at the time of their discharge. Waterman showed that in 23% of all the patients, INR was out of the accepted range and 36% of these cases can be due to changes in the patients' eating, incorrect understanding of the drugs dose, omitting a dose, lack of consultation, excessive use of alcohol or failure in accurate and scheduled prescriptions [40].

Valve-replacement patients need special attention and their care is inappropriate and they have a stressful life. Physicians and patients' strategies are sometimes harmful and can influence the person's life and make some risks for them, which is a threat and concern for the patients who use warfarin.

5. Conclusions

There is fear and concern about INR fluctuation and effort for correct use of warfarin and regulating INR during warfarin use. All of them show the necessity of paying attention to this group and patients' care is not coherent and comprehensive, and it is taken from different sources and they are mostly dangerous. Nurses' role in taking care of these patients after discharge is very limited. These patients mostly refer to the physicians and laboratory for controlling PT, INR and regulating warfarin use. Incomplete and non-professional care of these patients often cause fear and anxiety. Nurses can help in taking care of these patients through actual knowledge of the patients 'problems by providing comprehensive and technical care and by the help of functional models.

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