O R I G I N A L   P A P E R

A Turkish Version of the Cardiac Patients' Learning Needs Inventory; Patient Questionnaire (TR-CPLNI): Reliability-Validity Assessment

Hilal Uysal, PhD
Istanbul University, Nursing Faculty, Medical Nursing Department, Istanbul, Turkey

Nuray Enç, PhD
Professor, Istanbul University, Nursing Faculty, Medical Nursing Department, Istanbul, Turkey

Correspondence: Hilal Uysal, PhD. Istanbul University, Nursing Faculty, Medical Nursing Department Abide-i Hurriyet cad. No:82, 34381 Sisli, Istanbul - Turkey
E-mail: hilaluysal@gmail.com hilaluysal@istanbul.edu.tr

Abstract

Background: The knowledge obtained from the tools for identifying patients' educational needs may form the basis for devising an individualized cardiac educational program. New approaches should prioritize educational planning oriented towards AMI patients' educational needs.
Aim: This study was designed to investigate the validity and reliability of the Turkish adaptation of The Cardiac Patients' Learning Needs Inventory(TR-CPLNI); Patient Questionnaire to determine the educational needs of patients admitted to hospital following their first MI.
Methodology: The study included 143 patients (21 women, 122 men; age ≤70 years) who were treated for their first MI, with recovery from the acute period without chest pain. Data were collected using a questionnaire on sociodemographic features and the Turkish version of the CPLNI. Validity studies included language and content validity. For reliability analyses, Cronbach's alpha coefficients were calculated and, for test-retest reliability, the scale was re-administered after a two-week interval.
Results: The age groups of the participants were; 30-39 years (7.0%), 40-49 years (40.6%), 50-59 years (24.5%), and 60-70 years (28.0%). Content validity index of the scale was 0.96. The overall Cronbach's alpha coefficient was calculated as 0.96, ranging from 0.78 to 0.92 for eight subscales. Item total correlations were between 0.65 and 0.85 (p<0.01). The overall test-retest reliability was 0.77 (p=0.00), ranging from 0.42 to 0.75 for eight subscales. Patients admitted to the clinic determined the important subjects which they wanted to gain information as "medication information", "anatomy and physiology of heart", "symptom management" respectively. After being discharged, they arranged the important subjects as life-style factors, anatomy and physiology of heart, dietary information respectively. **Conclusion:** Our results demonstrate that the Turkish version of the CPLNI can be used as a valid and reliable tool in measure the educational needs of Turkish patients sustaining their first MI.

Keywords: Educational needs, myocardial infarction/psychology, Turkish CPLNI, validation studies as topic, reliability.

Introduction

Acute myocardial infarct (AMI) is a critical community health problem since it may lead to deaths, it is more frequently encountered in the productive age group and it leads to serious problems due to post-acute period complications (Johnston, Foulkes, Johnston et al., 1999). According to American Heart Association (AHA) data, the incidence of myocardial infarct (MI) in society is 1.9-5.2% (American Heart Association, 2003; Antman, Hand, Armstrong et al., 2008).

When compared with other circulatory/ cardiovascular disorders, myocardial infarct remains as the disease leading to the highest number of deaths in men and women in the United States of America (Purcell, Daly, Petersen, 2009). In Turkey, the situation is not so different (Kultursay, 2001).

Nearly 78% of the heart and vascular-related disorders have occurred in developing countries (Agırbaşlı, Aka, Akcevin, et al. 27 Kasım 2006). Compared with other European countries, coronary-rooted deaths occupy the highest levels in Turkey in terms of the 45-74 age group (American Heart Association, 2003). According to TEKHARF (Survey on Prevalence of Cardiac Disease and its Risk Factors in the Adults Population in Turkey) study data, each year approximately 80.000 people in Turkey have MI (Onat, Hergenc, Sansoy et al., 2007). It is estimated that coronary morbidity and mortality increases at a rate of 5% annually and it is anticipated that in the next 10 years the number of coronary artery disease patients will rise from 2.8 million to 5.6 million (American Heart Association, 2003; Onat, Hergenc, Sansoy et al., 2007).

The increase in the society's urge for a healthy life as well as medical and technological advances have lengthened the life span and brought about the issue of maintaining a high-quality lifestyle along with chronic disorders. The prerequisite to solving this problem is increasing the individual's, families' and the society's awareness through education and having them undertake more responsibility for their health/disorders. Undoubtedly, this would be ensured by acquiring the necessary knowledge, skills and behaviors, that is, training (Tasocak, 2003). Education is a systematic process which aims at forming observable and conscious changes in a patient's attitudes or behaviors through teaching (Tasocak, 2003; Jackson, Cheney, 1987). The necessary steps for an effective education can be listed as identifying the patients' primary learning needs, creating appropriate educational materials, checking the learning environment, using appropriate educational techniques and evaluating the results (Jackson, Cheney, 1987).

Nurses form the only professional group which considers the individual with all scales (biological, psychological, social) and his/her environment and is in constant interaction with the healthy/unhealthy individual. For this reason, they have the most significant role in health education-related activities (Tasocak, 2003). The education programs formed by the nurses should be oriented towards the patients' perceptions of what they need to know about their own health. Otherwise, achievement will be impossible. In order to identify patients' learning needs, various measurement devices have been devised (Timmins, Kaliszer, 2003; Czar, Engler, 1997). The objectives of using measurement instruments in patient education include evaluation and definition of patients' educational needs, identification of the patients' and their families' knowledge levels or criteria in related issues independently, assessment of the education's results, the effect of educational programs and educators, optimizing the ongoing care by making use of the results, knowledge of what patients know in order to obtain effective results and monitoring patient groups' achievement levels (Redman, 2003).

"The Cardiac Patients' Learning Needs Inventory; Patient Questionnaire (CPLNI)", which is one of the questionnaires used in order to identify cardiac patients' learning needs, was first developed by Gerard and Peterson in 1984. It has become a valuable and effective measurement instrument for identifying cardiac patients' educational needs and for measuring their perception level of these needs. In previous studies, cardiac patients' educational needs areas were listed as anatomy and physiology, lifestyle, drugs, exercise, psychological factors and nutritional style. In addition, it was pointed out that patients' educational needs might differ on the basis of recovery stages (Timmins, Kaliszer, 2003; Czar, Engler, 1997; Ashton, 1997; Turton, 1998; Burney, Purden, McVery, 2002).

Gerard and Peterson (1984) focused on the educational needs of the MI patients staying in the coronary intensive care unit (CCU) and those who are transferred to the wards. The researchers have determined that patients perceive the risk factor category as the primary educational need and knowledge about the drugs as the secondary one (Timmins, Kaliszer, 2003; Ashton, 1997; Turton, 1998). In cases where patients' knowledge requirements are not met, insufficient treatment, decrease in coping ability, increase in anxiety, decrease in psychological and physical state of wellness are observed. As a result, following AMI, decrease in patients' quality of life (QOL) is observed (Timmins, Kaliszer, 2003).

The knowledge obtained from the tools for identifying patients' educational needs may form the basis for devising an individualized cardiac educational program (Czar, Engler, 1997). Although the importance of individualized patient education that should be given in the hospital and in the post-discharge period is

emphasized frequently, in many patients a lack of knowledge has been observed following the acute cardiac events. In this period in which worries over discharge from the hospital and financial activity continue, provision of high-quality and effective knowledge to the patients has primacy in health care (Timmins, Kaliszer, 2003). Novel and effective approaches towards care will be highly limited for patient education since they will decrease the average period of hospital stay. For this reason, new approaches should prioritize educational planning oriented towards AMI patients' educational needs (Erefe, 2002).

Therefore, the present study aims to identify whether CPLNI is a valid and reliable instrument in terms of identifying educational needs of those patients who have had myocardial infarct.

Methodology

The present study was carried out in cross-sectional design whereby psychometric tests were applied in order to validate the validity and reliability of Turkish CPLNI.

Participants

The research was carried out with the participation of hospitalized patients who had MI for the first time and stayed in cardiology services of a hospital wards between 2007 and 2008. The sample included patients who had passed the acute period (the 5th and 7th days following diagnosis), under 70, who did not have chest ache and heavy morbidity that would influence participation in the study, those who were literate in Turkish, those who had no serious mental disorder and those who were found by the doctor to be appropriate for the interview. Patients with communication difficulties (those who used narcotic analgesics at a level that will influence speaking, perception of questions and answers) and those who had joined a cardiac training earlier were excluded from the study. Patients who had in-patient therapy in the clinic in the specified dates for research and who match the sampling selection criteria were informed about the study and those who accepted to participate were included in the study. In similar instrument studies, a sample size of 30-40 patients was considered to be sufficient for the test-retest application (Oksuz, Malhan, 2005; Gozum, Aksayan, 2003). Therefore, the sample size for test-retest was determined as 30 patients. The sample size of the study was targeted as 143

patients, which is at least three times the number of questionnaire items (38).

Data collection instruments

CPLNI- Cardiac Patients' Learning Needs Inventory; Patient Questionnaire developed by Gerard and Peterson (1984) was strengthened as a result of related studies (Timmins, Kaliszer, 2003; Czar, Engler, 1997; Redman, 2003; Gerard, Peterson, 1984; Ashton, 1997; Turton, 1998; Karlik, Yarcheski, 1987) in the field and its reliability was maintained; it has been regarded as a significant and effective measurement instrument for identifying MI patients' learning needs with its short, simple and comprehensible structure for patients to understand the importance of these needs.

CPLNI comprises 38 items which measure 8 subscales related to cardiovascular disorder patients' educational programs. These subscales are listed below: "anatomy and physiology of heart (5 items)", "psychological factors (4 items)", "lifestyle factors (3 items)", "medication information (5 items)", "dietary information (5 items)", "physical activity (6 items)", "symptom management (6 items)", "miscellaneous (4 items)". The original instrument starts with the statement "I need to know or would have needed to know". The patient is asked to rate how important it is for them to know about a certain item on the basis of 0-5 points ("not important", "somewhat important", "moderately important", "important", "very important" and "not applicable"). In the assessment, the statement "not applicable" was considered as "0 point" so that it will not influence scoring. The instrument was assessed by means of Likert-type scale measurement technique; items with the lowest scores were considered as having the least importance for the patient while those with the highest scores were considered as having the highest importance. The scale was completed by the patient or via face-to-face interview in 10-15 minutes (Gerard, Peterson, 1984).

The Turkish version of CPLNI was applied by the researcher in the acute inpatient wards via face-to-face interview followed by telephone interviews 15 days later. For the test-retest application, the patients were given TR-CPLNI instrument during discharge. On the forms it was reminded that patients were going to fill out the form again 15 days later. The patients were called on the specified dates and their choices on the form were elicited orally.

Language and content validity

In order to maintain the linguistic equivalence of the Turkish translation and the original English version of The Cardiac Patients' Learning Needs Inventory; Patient Questionnaire (CPLNI), the instrument was translated from English to Turkish independently by the researcher and two English language specialists. After the most appropriate expressions for the instrument items were selected, the back-translation of the instrument was done by a Turkish native-speaker who is proficient in both languages and cultures and the two translations were finalized after the comparison of both translations with the original English version (Eser, 2006; Maneesriwongul, Dixon, 2004; Bek, Simsek, Erel et al., 2009).

Later, the TR-CPLNI was presented to experts' evaluation in terms of content validity (Eser, 2006). At this stage, 12 experts comprising five cardiologists who have knowledge of instrument preparation techniques and methods, five academician nurses, a psychologist and a liaison psychiatric nurse gave their opinions (Oksuz, Malhan, 2005). In order to evaluate expert opinions, the Content Validity Index (CVI) was adopted. The appropriacy of each questionnaire item was evaluated by the experts on a scale of 1-4 (1: not suitable, 2: suitable a little/the phrase should be revised, 3: well suitable but minor changes should be made, and 4: very suitable). In such an evaluation, 80% of the instrument items are expected to receive at least 3 or 4 points (Oksuz, Malhan, 2005; Uysal, Ozcan, 2011; Yurdagul, 2005; Uysal, Ozcan, Enc, 2009).

Finally, in order to test the readability and understandability of TR-CPLNI, whose linguistic and content validity was maintained after evaluating expert opinions and recommendations, a pilot study was conducted with 10 patients meeting the case selection criteria (Appendix A).

Reliability

Reliability is a concept which demonstrates the internal consistency of all of the items and their homogeneity in measuring the problem at hand. It is an essential feature which every measurement instrument must possess. This feature determines whether the instrument collected the data accurately and whether it is replicable. In TR-CPLNI's reliability analysis, test-retest and internal consistency evaluations were done. Whether the instrument yielded similar measurements in repeated measurements at different times was evaluated by test-retest

method carried out with a 15-day interval. A sample size of 30-40 patients was considered to be sufficient for the test-retest application (Oksuz, Malhan, 2005; Gozum, Aksayan, 2003). In the study, the test-retest reliability was tested in 30 patients with two-week intervals. The first interview was carried out prior to discharge while the second interview was done 15 days later. In order to check the test-retest reliability of the Likert-type instrument, the correlation between the two application tests was analyzed by means of the Spearman correlation technique (Gozum, Aksayan, 2003).

In order to evaluate the internal consistency of TR-CPLNI, the Cronbach's alpha and total item correlation analyses were applied. It is assumed that the higher the Cronbach's alpha coefficient is (>0.60), the more consistent the items in the instrument will be (Erefe, 2002; Oksuz, Malhan, 2005). Identifying to what extent the instrument items measure similar behaviors was carried out by measuring the relationship between the obtained scores and the instrument's total score (total item correlation). There is no certain standard for the total item correlation. In the literature, values of 0.50 and over are accepted to be significant and in order not to spoil the scale's calculability feature, the correlations should not be negative and should be over 0.20 (Oksuz, Malhan, 2005).

Data analysis

Since a "Likert-type Instrument" was adopted in the study, non-parametric tests were preferred. For the reliability and validity analysis of the instrument, the internal consistency analysis (Cronbach's alpha analysis), total item correlation analysis and test-retest reliability analyses were performed. For content validity, the "Content Validity Index" was adopted for assessing expert opinions. Data related to the socio-demographic features of the cases were demonstrated by means of frequency and percentage. Data analysis was performed by means of SPSS (Client Version14.0) while the level of significance was considered as $p<0.05$.

Ethical considerations

Initially, consent was taken from Gerard (1984) who developed CPLNI (Cardiac Patients Learning Needs Inventory), in order to carry out the adaptation to Turkish, validity and reliability studies. Subsequently, consent of the ethics committee and the institutional consent were

obtained from the research institutions. The patients invited to participate in the study were informed in line with the Helsinki Declaration and were included in the study upon taking their oral consent (Erefe, 2002; Babadag, 1991).

Results

The socio-demographic features of the participants are demonstrated in Table 1.

Table 1: Socio-demographic features (n:143)

		n	%
Gend	Female	21	14.7
	Male	122	85.3
Age	30-39	10	7.0
	40-49	58	40.6
	50-59	35	24.5
	60-70	40	28.0
Employment status	Workman	10	7.0
	Civil servant	21	14.7
	Retired	51	35.7
	Housewife	14	9.8
	Free	47	32.9
Education	Primary school	58	40.6
	Middle school	73	51.1
	High school/Univ.	12	8.4
Additional diagnosis	Hypertension	36	25.2
	Hyperlipidemia	36	25.2
	Heart failure	5	3.5
	Bradycardia, 1. or 2. degree AV block	2	1.4
	Orthostatic hypotension	1	0.7
	Tachyarrhythmia	2	1.4
	Diabetes	16	11.2
	Atma and COPD[*]	3	2.1
	Rheumatic fever diseases	3	2.1

*COPD: Chronic Obstructive Pulmonary Disease

The results reveal that 14.7% of the participants were female while 85.3% were male; 7% were 30-39 years old, 40.6% were 40-49 years old, 24.5% were 50-59 years old and 28% were 60-70 years old. In addition, 40.6% of the participants

had primary school diploma, 51.1% had high school diploma and 8.4% had university diploma. Considering the additional diagnoses of the participants, the majority (25.2%) had hypertension, 11.2% had diabetes, 3.5% had heart failure, and 2.1% were diagnosed with asthma and COPD. Among the participants, 25.2% (n=36) had hyperlipidemia.

The distribution of the TR-CPLNI subscales is shown in Table 2. In the instrument, each subscales is rated on a scale of "0" to "5". In the pre-discharge evaluation, the subscale with the smallest mean was "miscellaneous" (2.41); the subscales with the highest means were "anatomy and physiology of heart" (3.17), "medication information" (3.17), "symptom management" (3.04), "dietary information" (3.03) subscales. Following the discharge, the subscales with the lowest mean score was "lifestyle factors" (3.50), "anatomy and physiology of heart" (3.48), "dietary information" (3.46), "medication information" (3.38),"symptom management" (3.35) subscales.

Validity

In order to determine the validity of the instrument items, content validity index was used. In order to adapt CPLNI to Turkish culture and make it easily comprehensible for MI patients in Turkey, necessary changes were made in line with expert opinion. The "risk factors" in two different studies (Gerard, Peterson, 1984; Karlik, Yarcheski, 1987) was changed as "lifestyle factors" and the subscales "Diet" in the original instrument (Gerard, Peterson, 1984) was changed as "dietary information" while the subscales "activity" was changed as "physical activity". The CVI of the TR-CPLNI items was determined as 0.96.

Reliability

The reliability of CPLNI was measured by means of Cronbach's alpha internal consistency coefficient, total item correlation and test-retest reliability analysis. In the study, the Cronbach's alpha for the whole instrument was found to be 0.96 and 0.78-0.92 for the subscale (Table 3) (Gozum, Aksayan, 2003). It was understood that the total item correlation for all CPLNI items was positive and statistically significant 0.64-0.85 (p<0.01) (Table 4). The instrument's total item correlation values are within the values reported in the literature (Maneesriwongul, Dixon, 2004).

For the test-retest reliability analysis, the level of the relationships between the variables was measured by means of Spearman correlation analysis. The Turkish total score test-retest value was found to be 0.77 (n=143, p=0.00), the test-retest correlations of the subscale were found to vary between 0.42 and 0.75 (Table 4). In conclusion, the obtained findings revealed that TR-CPLNI is a valid and reliable instrument. The mean, median and standard deviation values of the 1st and 2nd interviews for Turkish CPLNI are presented in Table 4.

Table 2: Comparisons of subscale scores original CPLNI, three different modified CPLNI and Turkish CPLNI

	Gerard and Peterson (1984) Original CPLNI		Karlik and Yarcheski (1987) Modified CPLNI-1		Chan (1990) Modified CPLNI-2		Timmins and Kaliszer (2003) Modified CPLNI-3	Uysal and Enç Turkish CPLNI	
	CCU (n:16)	AD** (n:15)	CCU (n:15)	AD** (n:15)	Service (n=30)	AD** (n=26)	Service (n:27)	Service (n:143)	AD** (n:35)
Introduction to the CCU	4.30 (4)*	4.46 (2)*	4.13 (4)*	3.93 (4)*	-	-	-	-	-
Anatomy and Physiology of heart (the workings of the heart)	4.22 (6)*	4.42 (3)*	4.23 (2)*	4.03 (2)*	3.45 (2)*	3.96 (4)*	4.44 (4)*	3.17 (1)*	3.48 (2)*
Psychological factors	4.39 (2)*	4.33 (5)*	3.98 (8)*	3.78 (7)*	3.32 (5)*	3.85 (6)*	4.13 (7)*	2.70 (4)*	3.02 (6)*
Lifestyle factors	(RF)† 4.53 (1)*	(RF)† 4.47 (1)*	(RF)† 4.38 (1)*	(RF)† 4.18 (1)*	3.59 (1)*	4.17 (1)*	4.52 (3)*	3.03 (3)*	3.50 (1)*
Medication information	4.39 (2)*	4.37 (4)*	4.20 (3)*	4.18 (1)*	3.35 (4)*	4.09 (2)*	4.53 (2)*	3.17 (1)*	3.38 (4)*
Dietary information	4.17 (7)*	4.01 (8)*	4.07 (7)*	4.01 (3)*	3.15 (7)*	4.02 (3)*	4.35 (6)*	3.03 (3)*	3.46 (3)*
Physical activity	4.34 (3)*	4.17 (7)*	4.08 (6)*	3.89 (5)*	3.17 (6)*	3.90 (5)*	3.71 (8)*	2.60 (5)*	3.00 (7)*
Symptom management	-	-	-	-	-	-	4.67 (1)*	3.04 (2)*	3.35 (5)*
Miscellaneous	4.32 (5)*	4.24 (6)*	4.11 (5)*	3.83 (6)*	3.41 (3)*	3.82 (7)*	4.36 (5)*	2.41 (6)*	2.65 (8)*

Size of each subscale scored up from "0" (the lowest degree of importance) to "5"(highest severity rating).
*The order of importance to the subscale **AD: After discharge

†RF: Risk Factors (Gerard and Peterson (1984), Karlik and Yarcheski (1987) evaluated the risk factors fort his subscale.)

Table 3: Internal Reliability (Cronbach's α) of Original and Turkish Cardiac Patients Learning Needs Inventory; Patient Questionnaire-CPLNI

	Original CPLNI (1984) Cronbach's α[*] n:20	TR-CPLNI[**] Cronbach's α[*] n:143
1- Anatomy and physiology of heart (the workings of the heart)	0.96	0.85
2- Psychological factors	0.69	0.83
3- Lifestyle factors	0.86	0.81
4- Medication information	0.89	0.92
5- Dietary information	0.89	0.91
6- Physical activity	0.81	0.78
7- Symptom management	0.81	0.88
8- Miscellaneous	0.84	0.83
Toplam	0.91	**0.96**

* Internal Reliability: Cronbach'α   ** TR-CPLNI: Turkish-CPLNI

Table 4: Item to total correlations, intraclass coefficient and 1. and 2. interview mean and median values of Turkish CPLNI

Items	Item to total correlation (n=143)p<0.01	Intraclass coefficient[*] (n=35)p<0.01	Service Mean±SD (median)	AD[**] Mean±Sd (median)
Anatomy and physiology of heart (the workings of the heart)		0.69		
1. Why I have pain on the chest?	0.85	0.51	3.19±0.88(3.0)	3.51±0.65(4.0)
2.How heart works? How blood support can be provided to the heart muscle?	0.73	0.67	2.94±1(3.0)	3.28±0.92(3.0)
3. What are the reasons for a heart attack?	0.79	0.53	3.25±0.96(3.0)	3.48±0.88(4,0)
4. What does a person do who is undergoing a heart attack?	0.73	0.67	3.29±0.82(3.0)	3,62±0.64(4.0)
5. How long does the recovery tak efor the damaged heart muscle?	0.64	0.65	3.20±0.91(3.0)	3.48±0.81(4.0)
Psychological factors		0.42		
6. What is the expected psychological answer after the heart attack?	0.85	0.51	2.62±1.26(3.0)	2.88±1.02(3.0)
7. Speak to someone about my fears, feelings and ideas.	0.73	0.45	2.61±1.11(3.0)	2.94±1.02(3.0)
8.What ist he effect of stress to my heart?	0.79	0.34	2.93±1.12(3.0)	3.25±0.91(3.0)
9.What can I do in order to diminish stress in my life?	0.73	0.45	2.65±1.07(3.0)	3.02±1.04(3.0)
Lifestyle factors		0.58		
10.What does „Life style factor" term refer to.	0.85	0.52	2.63±1.05(3.0)	3.22±0.87(3.0)
11.What are the lifestyle factors supporting my heart attack?	0.73	0.74	3.06±0.97(3.0)	3.54±0.70(4.0)
12.What can I do to prevent to have another heart attack again?	0.79	0.26	3.39±0.83(4.0)	3.74±0.50(4.0)
Medication information		0.69		
13.General rules about medicine use.	0.85	0.88	3.12±0.98(3.0)	3.37±0.73(3.0)
14.Why I should take the each medicine that I use?	0.73	0.75	3.22±0.86(3.0)	3.42±0.69(4.0)
15.When should I take each medicine that I use?	0.79	0.65	3.24±0.86(3.0)	3.45±0.65(4.0)
16.What are the probable side effects of the medicine that I use?	0.73	0.58	3.04±1.07(3.0)	3.28±1.01(4.0)
17.What should I do if I face with a problem after I take my pills?	0.64	0.54	3.22±0.92(3.0)	3.40±0.73(4.0)
Dietary information		0.75		
18.General rules about healthy diet.	0.85	0.74	3.09±1.03(3.0)	3.54±0.78(4.0)
19.How can affect some oft he fats my heart?	0.73	0.81	3.06±0.95(3.0)	3.54±0.78(4.0)
20.Which cholesterol creates what?	0.79	0.63	2.87±1.01(3.0)	3.25±0.91(3.0)
21.Which foodstuff increases cholesterol level?	0.73	0.65	3.04±1.03(3.0)	3.40±0.94(4.0)
22.What sort of change should I make on my diet?	0.64	0.40	3.12±0.94(3.0)	3.57±0.60(4.0)
Physical activity		0.68		
23.General rules about pysical activities after heart attack.	0.85	0.37	2.95±1.03(3.0)	3.40±0.88(4.0)
24.When I can start to drive again?	0.73	0.71	2.18±1.62(2.0)	2.65±1.45(3.0)
25.If there is, what kind of physical activities should I keep myself away?	0.79	0.55	2.65±1.06(3.0)	2.91±1.12(3.0)
26.How can I know that when I can increase my activity level?	0.73	0.70	2.64±0.98(3.0)	3.02±1.01(3.0)
27.When can I start my sexual life again?	0.64	0.54	2.50±1.49(3.0)	3.08±1.17(3.0)
28.When can I go back to my work?	0.70	0.45	2.67±1.59(3.0)	2.91±1.37(3.0)
Symptom management		0.46		
29.What are the varieties and reasons oft he chest pain?	0.85	0.43	2.89±0.98(3.0)	3.25±0.81(3.0)
30.What can I do when I have chest pain?	0.73	0.59	3.17±0.83(3.0)	3.45±0.61(4.0)
31.What are the symptoms and oft he heart attack?	0.79	0.64	3.28±0.79(3.0)	3.65±0.53(4.0)
32.When should I call doctor or ambulance?	0.73	0.45	3.17±0.86(3.0)	3.42±0.73(4.0)
33.Especially in what sort of cases can I have chest ache?	0.64	0.48	2.96±0.92(3.0)	3.37±0.77(4.0)
34.When and how Nitroglycerin spray and tablets can be used?	0.70	0.17	2.74±1.15(3.0)	2.97±1.17(3.0)
Miscellaneous		0.55		
35.When I have been discharged from the hospital what sort of supporting services can be found?	0.85	0.55	2.20±1.19(2.0)	2.37±1.19(2.0)
36.What sort of support can be found form my family?	0.73	0.56	2.23±1.18(2.0)	2.37±1.21(2.0)
37.What kind of tests will be done after been discharged from the hospital?	0.79	0.69	2.90±0.95(3.0)	2.31±0.83(3.0)
38.Where can my family learn detailed information about CPR?	0.73	0.54	2.33±1.13(2.0)	2.57±1.11(3.0)
Total score		0.77		

[*]Spearman Correlation Coefficient. [**]AD: After discharge

Table 5: Priority important training needs of the myocardial infarction patients service and after discharge

Items	Service	AD[*]
12. What can I do to prevent to have another heart attack again?	1	1
31. What are the symptoms and oft he heart attack?	3	2
22. What sort of change should I make on my diet?	-	3
11. What are the lifestyle factors supporting my heart attack?	14	4
18. General rules about healthy diet.	12	5
19. How can affect some oft he fats my heart?	13	6
1. Why I have pain on the chest?	8	7
3. What are the reasons for a heart attack?	4	8
5. How long does the recovery tak efor the damaged heart muscle?	7	9
15. When should I take each medicine that I use?	5	10
30. What can I do when I have chest pain?	-	11
32. When should I call doctor or ambulance?	9	12
17. What should I do if I face with a problem after I take my pills?	-	13
21. Which foodstuff increases cholesterol level?	16	14
13. General rules about medicine use.	10	15
33. Especially in what sort of cases can I have chest ache?	-	16
2. How heart works? How blood support can be provided to the heart muscle?	-	17
16. What are the probable side effects of the medicine that I use?	15	18
8. What ist he effect of stress to my heart?	-	19
20. Which cholesterol creates what?	-	20
29. What are the varieties and reasons oft he chest pain?	-	21
10. What does „Life style factor" term refer to.	-	22
27. When can I start my sexual life again?	-	23
9. What can I do in order to diminish stress in my life?	-	24
26. How can I know that when I can increase my activity level?	-	25
4. What does a person do who is undergoing a heart attack?	2	-
14. Why I should take the each medicine that I use?	6	-
13. General rules about medicine use.	10	-

[*]AD: After discharge

Discussion

Providing education and guidance along with medical treatment to the patients is the most significant objective in order to decrease psychological and physiological problems and increase quality of life after the myocardial infarct. Education, which has always been an important scale of the nursing profession, is the most effective method for developing the patient's compatibility with treatment, making the discharge plan, increasing quality of life and functional capacity and the individual's return to normal activities. In acute myocardial infarct, the training provided prior to discharge is effective in terms of decreasing the period of hospital stay as well as increasing the treatment effectiveness and functional capacity and decreasing re-hospitalization due to recurring ischemia (Enar, 2005; McVeigh, Bleakney, Cupples et al., 2006). The previous studies also lend support to these results (McVeigh, Bleakney, Cupples et al., 2006; Gibbons, Balady, Bricker et al., 2002; Uzun, 2007).

Another aim of the training provided after acute myocardial infarct is to empower the patient in terms of claiming responsibility for managing their own illness (Buckley, McKinley, Gallagher, Dracup, Moser, Aitken, 2007; Finset, 2007; Uyer, 1992). Patient education is a significant component of the cardiac rehabilitation (McVeigh, Bleakney, Cupples, Downey, Doyle, 2006).

For this reason, it is of significance to develop a training program which is appropriate for patients' needs, and having a well-planned content (Buckley, McKinley, Gallagher, Dracup, Moser, Aitken, 2007; Finset, 2007; Uyer, 1992). Patient-family education comprises the processes of identifying the aims, determining, planning and applying educational needs, and the evaluation of the training. In order to identify the patient's educational needs, the patient's history, medical records and patient family as well as assessment tools are made use of (Uyer, 1992; Wingard, 2005).

Within the past 20 years, many studies have been conducted in order to identify health care workers' and myocardial infarct patients' educational needs. In the previous studies, it was demonstrated that MI patients need information related to their illness, the risk factors, symptom management and drug treatment (Timmins, Kaliszer, 2003; Czar, Engler, 1997; Gerard, Peterson, 1984; Ashton, 1997; Karlik, Yarcheski, 1987; Hanssen, Nordrehaug, Hanestad, 2005). The content of individualized patient education, which is a frequently included component of cardiac rehabilitation programs in the past few years, should be formed after carrying out evaluations with regard to how health care workers and patients perceive educational needs.

In various studies where CPLNI has been used, educational needs in different recovery periods after MI and among different groups were compared. In addition to this, similar to the present study, in three studies (Ashton, 1997; Chan, 1990; Wingate, 1990) only MI patients' perception of educational needs were evaluated while in other studies (Gerard, Peterson, 1984; Turton, 1998; Karlik, Yarcheski, 1987) both patients and nurses' perception of educational needs was evaluated. Ashton (1997) compared and contrasted the educational need perceptions of male and female patients while Karlik and Yarcheski (1987) did the same for patients, nurses and nurse educators' educational need perceptions. Turton (1998), changed the original CPLNI in order to understand how MI and angina patients perceive educational needs, checked its validity and reliability and compared and contrasted the perception of families, patients' and nurses' educational needs.

Gerard and Peterson (1984) included 35-84 year-old 31 patients diagnosed with cardiac disease in order to identify MI patients' educational needs. Of the patients, 16 were evaluated during their stay in the coronary intensive care unit while 15 were evaluated upon discharge. Karlik and Yarcheski (1987) worked with 30 MI patients (24 men and 6 women), who were 38-78 years old. The patients' inclusion criteria in the present study were similar to that of Gerard and Peterson's (1984) and Karlik and Yarcheski's (1987). Of the participants (n=143), 21 were female while 122 were male and their ages ranged between 30 and 70. In the present study, similar to Chan (1990) and Turton's (1998) studies, the first interviews were made in the clinic not in the CCU. Thirty patients were interviewed again after discharge in order to reapply CPLNI. In another study, CPLNI was reapplied to the patients after MI's 3rd day and information about their educational needs was obtained (Timmins, Kaliszer, 2003). In the present study, too CPLNI was applied on the 5th-7th days upon hospitalization and the importance

levels of educational needs for patients in the clinic and post-discharge patients were determined.

Gerard and Peterson (1984) had stated that 15 participants had at least 2 significant risk factors while 11 patients had been hospitalized previously due to cardiovascular reasons. Similarly, in the present study 36 patients had significant risk factors like hypertension and hyperlipidemia while 16 patients had diabetes. It was understood that the participants had applied to the clinic due to cardiac failure (n=5), bradycardia (n=2), 2nd or 3rd degree AV block (n=2), tachyarrhytmia (n=2), asthma and COPD. (n=3), whereas 3 patients had rheumatic fever disorders previously (Table 1). Gerard and Peterson (1984) developed CPLNI in order to investigate the perception levels of cardiac patients and nurses serving cardiac patients with regard to educational needs. The present study aimed to adapt CPLNI to Turkish and to identify the educational needs of Turkish patients who had myocardial infarct for the first time.

Validity

Gerard and Peterson (1984) stated that the content validity and Cronbach's alpha reliability analysis results were at acceptable levels for the original CPLNI. In order to adapt CPLNI to Turkish culture and make it comprehensible for MI patients in Turkey, necessary changes were made in three subscales of the instrument in line with expert opinions. The subscales "risk factors" found in two different studies (Gerard, Peterson, 1984; Karlik, Yarcheski, 1987) was changed as "lifestyle factors" similar to Timmins and Kaliszer (2003) and Turton; the subscales "diet" was changed as "dietary information" similar to Timmins and Kaliszer (2003). In the present study, the CVI value of each Turkish (TR) CPLNI item was found to be 0.96. The CVI result of the Turkish CPLNI showed that there is consensus among experts related to the instrument items. The consensus among the experts show that as a whole, the instrument reflects the field to be measured, the content validity is maintained and there is a high level of content validity (Erefe, 2002; Eser, 2006; Bek, Simsek, Erelet al., 2009). In this respect, it was decided that the scale can undergo statistical analysis without excluding any items.

Reliability

A Cronbach's alpha value of $0.40 \leq \alpha < 0.60$ indicates low reliability, a value of $0.60 \leq \alpha < 0.80$ indicates high reliability while a value of $0.80 \leq \alpha < 1.00$ indicates very high reliability. It is known that using instruments with an internal consistency coefficient of 0.60 and lower carries a measurement risk (Uysal, Ozcan, Enc, 2009; Akgul, Cevik, 2005). The Turkish CPLNI has a Cronbach's alpha coefficient of 0.96, which is higher than that of the original CPLNI (0.91) (Gerard, Peterson, 1984) and the renewed CPLNI (0.95) (Karlik, Yarcheski, 1987) (Table 3). Czar and Englar (1997) stated that the instrument that they adapted from CPLNI had subscales with Cronbach's alpha values varying between 0.64 and 0.97. Similar to the original CPLNI (0.69-0.96) (Gerard, Peterson, 1984) and the renewed CPLNI (0.77-0.85) (Karlik, Yarcheski, 1987) TR-CPLNI subscales' Cronbach's alpha values ranged between 0.78 and 0.92, which means that it is a highly reliable instrument (Table 3).

The other method demonstrating the internal consistency of the instrument is the total item correlation coefficient. The higher the inter-item relationships in the total item correlation, the more the instrument items measure the same feature (Oksuz, Malhan, 2005; Ercan, Kan, 2004). In the study, the total item correlation coefficient was accepted to be at least 0.30 (Akgul, Cevik, 2005; Costa Santos, Costa Pereira, Bernardes, 2005). The total item correlation coefficients for all TR-CPLNI items were found to be statistically highly significant, ranging between 0.64 and 0.85 (Table 4). For the TR-CPLNI, the total correlation coefficient result comprises 38 items in the instrument. The obtained findings demonstrate that TR-CPLNI has a sufficient level of internal consistency (Akgul, Cevik, 2005; Ercan, Kan, 2004; Costa Santos, Costa Pereira, Bernardes, 2005). The test-retest reliability coefficient of the TR-CPLNI is 0.77 (p=0.00), while the subscales' test-retest correlations range between 0.42-0.75 (Table 4). The original CPLNI's test-retest correlations were not calculated (Gerard, Peterson, 1984).

Patient training and guidance should commence while the patient is in hospital after the acute period and in the post-discharge period it should continue via telephone calls (Karim, Gormley, 2007),

home visits and/or clinic check-ups (Allison, 2008; Ozyuncu, 2006). Research has shown that application and maintenance of individualized training and guidance before and after discharge is effective over recovery of post-MI cardiovascular lifestyle factors (Hanssen, Nordrehaug, Hanestad, 2005; Carlsson, Lindberg, Westin, Israelsson, 1997). As can be seen, the joint result of the past studies demonstrate that if the protective training and guidance program for optimizing risk factors continues after discharge, the results can be improved. For this reason, appropriate information, education and support must be provided to the patients both in order to maintain lifestyle changes and to adapt to therapeutic interventions (Alm-Roijer, Stagmo, Uden, Erhardt, 2004). This will only be possible by identifying patient needs accurately and by forming and applying appropriate educational programs.

The first study to define patients' educational needs was carried out by Dodge (1969). Later, Gerard and Peterson (1984) developed CPLNI in order to identify cardiac patients' learning needs. Gerard and Peterson (1984) compared patients' learning needs during hospitalization and post-discharge. According to findings, the significance level of the patients' educational needs related to risk factors was found to be at a high level. In addition, patients found the 30th item "What can I do when I have chest pain?" to be of high importance (Gerard and Peterson, 1984). In the present study, the items perceived to be primary educational needs by MI patients during the hospital stay and after discharge are demonstrated in Table 5. The 12th item, which is "What can I do to prevent to have another heart attack again?" was also determined as a highly significant learning need.

The original CPLNI (Gerard and Peterson, 1984), the renewed CPLNI (Timmins, Kaliszer, 2003; Karlik, Yarcheski, 1987; Chan, 1990; Turton, 1998) and the Turkish CPLNI are compared in Table 2. In a study (Gerard and Peterson, 1984), for patients in the coronary intensive care unit (CCU), having knowledge of anatomy and physiology was found to be less important in comparison with the pre-discharge period, while psychological factors, risk factors, drug treatment, nutritional style, physical activity and other issues were found to be more important. Karlik and Yarcheski (1987) determined that having knowledge related to all instrument scales is especially significant for patients in the CCU.

In the Turkish CPLNI, similar to Karlik and Yarcheski (1987), having knowledge of all instrument subscales was found to be more important for the ward patients in comparison with the post-discharge patients (Table 2).

CPLNI is an instrument comprising 8 subscales and was developed for cardiac patients and nurses serving cardiac patients (Gerard and Peterson, 1984). The patient was asked to indicate how important having knowledge of each item is important with a rating of 0-5 (not important, somewhat important, moderately important, important, very important, not applicable). In Table 2, the subscale mean scores obtained from two different studies (Gerard and Peterson, 1984; Karlik and Yarcheski, 1987) and the rank of each subscale are compared. Considering each subscale's significance level, the first rank constitutes the significant issues for the patients, and the eighth rank includes the least important issues for the patient (Table 2). In the study, TR-CPLNI results showed that knowledge of "medication information" and "anatomy and physiology of heart" was of primary significance during the hospital stay while knowledge of "medication information" occupied the fourth rank following the discharge and knowledge of "anatomy and physiology of heart" now occupied the second rank. Having knowledge of "symptom management" was ranked the second during hospital stay while it occupied the fifth rank following discharge. Having knowledge of "dietary information" occupied the same rank in the two evaluations: the third rank (Table 2). In the Turkish CPLNI, the subscales with the best scores were "anatomy and physiology of heart", "medication information", "symptom management", "lifestyle factors" and "dietary information". In studies excluding Gerard and Peterson's (1984) the subscales with the lowest scores were "miscellaneous", "physical activity" and "psychological factors" respectively.

The issue of physical activity (Timmins, Kaliszer, 2003; Gerard and Peterson, 1984; Karlik and Yarcheski, 1987; Chan, 1990) was not found to be subject of high priority for MI patients, as was the case in similar studies In the present study, patients stated that they needed to be trained on physical activity not during the hospital stay but after the discharge. This can be accounted for by the fact that during and after the recovery period, patients are not aware of the problems due to physical activity limitations and the importance of being active and the fact that

being physically active may be effective for decreasing the risk of having MI again. Turton (1998) states that sexual activity issue has a lower priority for education, and that the issue is perceived to be insignificant by the patient or their partners. Similarly, in the present study, the question "When can I start my sexual life again?" was scored as less significant and the sexual activity issue became more important following discharge. This is a significant indicator that for the MI patients the issues of educational priority may change in the recovery period following the acute period and discharge. These results point to the significance of individualized training programs on the basis of patient needs.

In Turkish CPLNI, similar to other studies, post-discharge patients rated "having knowledge of lifestyle factors" as highly important (Gerard and Peterson, 1984; Karlik and Yarcheski, 1987; Chan, 1990), while "psychological factors" was regarded to be less important (Timmins, Kaliszer, 2003; Gerard and Peterson, 1984; Karlik and Yarcheski, 1987; Chan, 1990). In the present study, similar to Timmins and Kaliszer (2003) "knowledge of lifestyle factors" was found to be in the third rank for the patients staying in the ward (Table 2). As a common outcome of this and other studies, "having knowledge of lifestyle factors" which lead to MI was found to be significant for the patients.

In contrast to previous studies, patients staying in the ward rated "knowledge of anatomy and physiology of heart" as the second most important scale (Table 2). Karlik and Yarcheski (1987) stated that CPLNI items 30,12,32 and 1 had the highest level of importance for the patients, whereas in the present study items 4,31,3, and 5 were found to be more important for the ward patients (Table 4). Similarly, Timmins and Kaliszer (1987) found items 1 and 5 to be more important for the ward patients. In the Turkish CPLNI, the 4 items in the "miscellaneous" subscale were the least significant issues for the ward and post-discharge patients (Table 2). In addition to this, a comparison of the previous studies (Czar, Engler, 1997; Gerard and Peterson, 1984; Karlik and Yarcheski, 1987) and TR-CPLNI in terms of each subscale's mean scores revealed no significant differences between the patients' educational needs during hospital stay and after discharge.

Limitations

This study incorporates an MI patient group who lives in a single city in Turkey. Therefore, it should be replicated in other regions of Turkey, too. In previous CPLNI-related studies, the educational needs of patients were analyzed while they were in the coronary intensive unit, in the ward and after they were discharged. In future studies to be conducted in Turkey it is recommended that CPLNI is evaluated in this way, too. Future studies might assist better understanding and discussion of different CPLNI scales. Studies comparing CPLNI with other instruments comparing and contrasting cardiac patients' learning needs will enhance CPLNI's validity and reliability.

The aforementioned limitations of the instrument should be removed and tested with different sampling groups, which will strengthen TR-CPLNI's validity and reliability.

Strengths

Gerard and Peterson (1984) stated that patients had less interest in the acute phase and understood the explanations in the recovery period more easily. Accordingly, patients' learning needs were determined after the acute phase ended, before and after discharge.

Since the patients were selected on the basis of inclusion criteria, no problem was experienced.

The present study employed the largest sample when compared with previous related studies.

Conclusion

Reliable and practical evaluation tools are necessary for developing educational programs in a limited period. The Turkish CPLNI is an instrument for developing educational programs on the basis of post-myocardial infarct patients' educational needs, has the capacity to measure MI patients' educational needs and has a high internal consistency level. Despite the limitations, the findings revealed that TR-CPLNI could provide the necessary information for developing and safely implementing an individualized training program in order to meet the educational needs of patients who had myocardial infarct for the first time.

In the future, more studies should look into the comparison of cardiovascular disorder (angina, myocardial infarct, heart failure) patients', their families' and health care workers' ranking perceptions of educational needs.

Since the patients' priority in educational needs might change before and after discharge, individualized training programs must be developed on the basis of disorder-specific recovery phases and the patients should be monitored after the discharge and assisted in adapting to lifestyle changes.

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Appendix A

Cardiac Patients Learning Needs Inventory (CPLNI); Patient Questionnaire
Dear participant, in order to plan your cardiac patient training programme, we would like you to fill this questionnaire completely. Please evaluate the information which is given below and can be useful during the recovery period according to the importance by marking an appropriate box for each single question related to the period after you have undergone heart attack. If there is any question which is not useful, please for this specific question, mark the box which is located under "not applicable". You may use (X) or (√) mark to mention your answer. Thank you.
Substances Rating: 1.Not Important, 2.Somewhat important, 3.Moderately important, 4.Important, 5.Very Important, 6.Not applicable.

1. Why I have pain on the chest?
2. How heart works? How blood support can be provided to the heart muscle?
3. What are the reasons for a heart attack?
4. What does a person do who is undergoing a heart attack?
5. How long does the recovery take for the damaged heart muscle?
6. What is the expected psychological answer after the heart attack?
7. Speak to someone about my fears, feelings and ideas.
8. What is the effect of stress to my heart?
9. What can I do in order to diminish stress in my life?
10. What does "Life style factor" term refer to.
11. What are the lifestyle factors supporting my heart attack?
12. What can I do to prevent to have another heart attack again?
13. General rules about medicine use.
14. Why I should take the each medicine that I use?
15. When should I take each medicine that I use?
16. What are the probable side effects of the medicine that I use?
17. What should I do if I face with a problem after I take my pills?
18. General rules about healthy diet.
19. How can affect some of the fats my heart?
20. Which cholesterol creates what?
21. Which foodstuff increases cholesterol level?
22. What sort of change should I make on my diet?
23. General rules about pysical activities after heart attack.
24. When I can start to drive again?
25. If there is, what kind of physical activities should I keep myself away?
26. How can I know that when I can increase my activity level?
27. When can I start my sexual life again?
28. When can I go back to my work?
29. What are the varieties and reasons of the chest pain?
30. What can I do when I have chest pain?
31. What are the symptoms and of the heart attack?
32. When should I call doctor or ambulance?
33. Especially in what sort of cases can I have chest ache?
34. When and how Nitroglycerin spray and tablets can be used?
35. When I have been discharged from the hospital what sort of supporting services can be found?
36. What sort of support can be found for my family?
37. What kind of tests will be done after I have been discharged from the hospital?
38. Where can my family learn detailed information about CPR?