Full Length Research Papers

The psychometric assessment of the Nottingham health profile for menopausal women in Turkish society

Mürüvvet Başer[1]*, Lale Taşkın and Bahar Güçiz Doğan[3]

[1]Department of Gynecology and Obstetric Nursing, Health Science Faculty, University of Erciyes, 38039 Kayseri-Türkey.
[2]Department of Gynecology and Obstetrics Nursing, Health Science Faculty, University of Hacettepe, Ankara, Turkey.
[3]Department of Public Health, Faculty of Medicine, University of Hacettepe, Ankara, Turkey.

The Nottingham health profile (NHP) is a measurement of 38 items that was designed for measuring quality of life. The present study was conducted in order to determine evaluation of validity and reliability of the NHP for menopausal women. Ninety one (91) women who were menopausal were included in the sample of the study. The comparison of total scores of NHP and the (Medical Outcomes Study) MOS 36 item short form Health survey - SF 36 was made to determine the accuracy of the NHP. The evaluation was carried out using test-retest-reliability analysis, and correlation analysis. The correlation between NHP and SF- 36 was as follows: the sensitivity was 78% and selectivity was 76%. The coefficient of test-retest-correlation of the measurement was 0.97.The NHP was found to be an above-average measurement for menopausal women. Results of the study showed that all the statements, subcategories and total scores and the Pearson Moment Multiplication Correlation Coefficient were satisfying.

Key words: Menopause, quality of life, Nottingham health profile.

INTRODUCTION

Menopause is a time of life for women in which psychological, social, as well as physical changes occur and some health problems may also take place. It was concluded that many of the women enter the menopause period between the ages of 40 to 55. Generally, the average menopause age is 51 (Reyes et al., 2005; Reynolds and Obermeyer, 2005) whereas it is 45 to 50 in Turkey (Dişçigil et al., 2006; Vehid et al., 2006; Biri et al., 2005; Kilaf, 2004).

Women's quality of life (QOL) can be greatly affected by such menopausal problems as vasomotor changes, disparanoia, orgasm and libido problems, and genitourinary system disorders (Biri et al., 2005; Greendale and Gold, 2005; Ho et.al., 2003; Coope, 1996). In addition hot flashing, anxiety, depression and insomnia are seen often during the perimenopausal period of women (Eichling and Sahni, 2005; Oddens et. al., 1992).

Hormone replacement therapy (HRT) can be used to ease menopausal complaints for a short-term period. HRT use can help provide relief for vasomotor symptoms, insomnia, urinary system disorders, reduced sexual desire, orgasm problems (Haines et al., 2005; Guest editorial, 2005; Rubin and Quine, 1999). It has been observed that HRT use can reduce cardiovascular disorders by 35 to 50% and also helps significantly in the prevention of bone-fractures due to osteoporosis (Oddens et al., 1992). Also, there have been numerous studies that prove that HRT use increases significantly the QOL (Barlow, 2005; Gambacciani et al., 2005; Hlatky et al., 2002; Rextode and Manson, 2002; Blumel et al., 2000).

It is necessary to adopt a preventive approach and to provide preventive treatment by diagnosing post-symptoms and complications before they occur as well as to provide therapies for menopausal complaints. In this respect, it is essential, primarily for nurses and other health care personnel to become more knowledgeable and aware of women's menopausal problems, to help them cope more easily with the changes and difficulties and to evaluate their quality of life and the factors that affect it in order to help them improve their quality of life (Ertüngealp and Seyisoğlu, 2000; Hassa 2000). "Quality

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*Corresponding author. E-mail: mbaser_8@yahoo.com. Tel: +90 352 4374937/ 42553. Fax: +90 352-437 92 81.

of life" means the feeling of "one's fitness, one's satisfaction from life or one's dissatisfaction from life, being happy or being unhappy" (Ferrans and Powers, 1985; Dündar 1995). Health care itself affects quality-of - life issues considerably even if it does not have any effect on life span. Therefore, quality of life is an increasingly and widely accepted concept which can be greatly improved with the proper knowledge and health care provided by medical personnel to women going through menopause.

In our country, nursing studies are increasingly using measurements to evaluate attitudes and behaviors of the individuals to whom health care is given. Most of these measurements have been designed in different cultures and have been modified for our own culture. There are numerous advantages in designing new measurements that are suitable for our own culture and also, this can prevent many adaptation problems. Still, there are many positive points in adapting measurements. Developing and modifying appropriate measurements for use in the native culture is advantageous in these ways: The NHP is well-known, used and recognized in international publications and modifying it for use in the native culture contributes positively to saving time that would otherwise be spent on designing a native-measurement and increases the time to be spent on theoretical and practical studies (Aksayan and Gözüm, 2002). Therefore, it is very useful to use a measurement to evaluate the validity and reliability for research and studies conducted in Turkey, in order to assess quality of life of menopausal women in this country.

Objective

This study was conducted to the psychometric assessment of the Nottingham health profile (NHP) for menopausal women in Turkish society which is used often in many cases and studies on menopausal women.

METHODS

Participants

This study was conducted at the Menopause Polyclinic of Kayseri State Hospital in Kayseri, Turkey. Two hundred women attending the Menopause Polyclinic at a month were enrolled in this study. This study was carried out by interviewing half (n= 100) of the women (n= 200), who visited the Menopause Polyclinic of Kayseri State Hospital at the city center for the first time. Nine women did not participate in the second session or interview. As such only 91 the results of test-retest were suitable for analysis.

Procedures and measures

The NHP was compared to the MOS 36 Item Short Form Health Survey-SF 36 in order to check its validity for menopausal women. Since no other suitable measurement as a golden test was found,

the SF- 36, which is used frequently in many studies in our country, was utilized.

So, the NHP and the SF 36 face-to-face interview technique were used with 100 women who visited the polyclinic for the first time. Later the women were invited to come to the polyclinic again to determine the reliability of the NHP; 91 women who responded to this invitation were interviewed face- to- face. Nine women did not participate in the second session or interview.

Life-quality measurement (Nottingham health profile – NHP)

The NHP was designed at Nottingham University, England in 1981 and it was updated at the School of Community Health Science of Queen's Medical Center in Nottingham University in England in 1981 (European Group for Quality of Life Assessment and Health Measurement, 1993). The Turkish version of the measurement which has 38 items was tested on Rheumatoid Arthritis by Küçükdeveci et al. (2000) for the validity and reliability (Table 1). The measurement was composed of six different subcategories that tested physical activity, energy, pain, social isolation, sleep and emotional reactions. It was necessary to answer all questions saying "yes" or "no".

For evaluation of life quality with the NHP, the scores of each subcategory and total scores of them were calculated. Each sub-category had different statement-scores and these statements were randomized in the measurement. The scores were between 0 and 100 for each subcategory. Since we did not have any threshold for the measurement, each subcategory was assessed within its own limits; therefore low scores meant low effect of the complaint / case whereas high scores meant high influence of the complaint / case.

Life-quality measurement (The MOS 36 item short form health survey-SF 36)

The SF 36 devised by Ware is used for clinical application and research, for evaluation of health policies and for assessment of general population research. It is a multidimensional scale that deals with 36 statements, 3 main titles, and 9 health perceptions. Its validity, reliability and sensitivity as applied to Turkish society have been researched and proven by Pınar (1995).

SF 36 Life Quality Measurement is evaluated and analyzed at two levels. At the first level, some titles are recoded and at the second level titles that have been recoded are combined; thus the summarized scores are found for 9 titles.

SF 36 is scored in a manner that quality of life regarding health shows increases as each health area score increases (positive scores). For example, a high score on the pain scale indicates a decrease in the level of pain. Scale scores of SF 36 have changeable values, from 0 and 100; from the lowest score to the highest score.

Ethical matters

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki (revised October 2000). All women who participated in the study were informed about the project both orally and their written consent was obtained. In addition, the written consent of the doctor-in-chief at the Kayseri State Hospital was taken.

Data analysis

As each health area score increases, SF 36 is scored in a positive manner for quality of life regarding health. Conversely, the NHP is

Table 1. Nottingham health profile. Below are talked about some problems that might be met in everyday life. Consider each problem whether you have got them or not; and say "yes" if you have got, say "no" if not.

Items	Yes	No
I'm tired all the time		
I have pain at night		
Thinks are getting me down		
I have unbearable pain		
I take tablets to help me sleep		
I have forgotten what it's like to enjoy my self		
I am feeling on edge		
I find it painful to change position		
I am feel lonelly		
I can only walk about indoors		
I find it hard to bend		
Everythink is an effort		
I am waking in the early hours of the morning		
I am unable to walk at all		
I am finding it hard to get on with people		
The days seem to drag		
I have trouble getting up and down stairs		
I find it hard to reach for things		
I am in pain when I walk		
I lose my temper easily these days		
I feel there is nobody I am close to		
I lie awake for most of the night		
I feel as if I'm losing control		
I am in pain when I'm standing		
I am find it hard to dress myself		
I soon run out of energy		
I am find it hard to stand for long		
I am in constand pain		
It takes me a long time to get to sleep		
I am feel I am burden to people		
Wory is keeping me awake at night		
I feel that life is not worth living		
I sleep badly at night		
I am finding it hard to make contact with people		
I need help to walk about outside		
I am in pain when going up or down stairs		
I wake up feeling depressed		
I am in pain when I'm sitting		

scored in a negative manner for quality of life regarding health as each health area score decreases. Accordingly, the scoring of the NHP was calculated by dividing "no" answers that had been given by the individual by the total number of the statements and multiplying it by 100 and the final scores were shown in a positive way as in SF 36. The test of the validity of NHP had been made as shown in Table 2.

After all the data relating to both measurements were collected, all the scores of each subcategory were calculated manually by the researchers. The scores of life quality were computerized by using the Statistical Package for Social Science (SPSS 12.0 for Windows

Program) and the statistical analyses were made.

An invariability criterion in time is a correlation (correlation coefficient) between the data groups, which are obtained by evaluating any situation under the same (similar) condition and during a certain period of time. In other words, it is the correlation coefficient between pre-measures and post-measures and it is expressed as Pearson Moment Multiplication Correlation Coefficient. It is determined with calculations of reliability-coefficient-correlation and is symbolized as "r". "r" absolute value indicates the strength of a linear relation and the highest value for "r" may be 1. It is held that the relation is weak if the correlation coefficient is

Table 2. The test of the validity of NHP.

New test (NHP)	Valid (reference) test (SF 36)		Total
	Those who have a bad life-quality (+)	Those who have a good life-quality (+)	
Those who have a bad life- quality (+)	a	b	a+b
Those who have a good life- quality (+)	c	d	c+d
Total	a+c	b+d	a+b+c+d

$$\text{Sensitivity} = \frac{a}{a+c} \times 100 = \frac{35}{35+10} \times 100 = 77.8\% \qquad \text{Selectivity} = \frac{d}{b+d} \times 100 = \frac{35}{11+35} \times 100 = 76.0\%$$

between 0.0 to 0.5; however the connection is strong if the correlation coefficient is between 0.50 to 1.0; and the closer the coefficient is to 1.0, the stronger the relation.

The examination of NHP-validity was carried out by using test-retest reliability (invariability criterion in time/stability/test–retest reliability) examination and correlation analysis. In order to test NHP-validity, its sensitivity and selectivity were found by its comparison to SF 36 and correlation analyses were made.

Limits of the research

The NHP was compared to the SF 36 (reference test) in order to determine its validity. That the subcategories of SF 36 and those subcategories of the NHP did not match was the limitation of the study-examination. As a result, only the total scores of both measurements were compared.

RESULTS

Results about the NHP-validity

Life-Quality Test Measurement –SF 36, which has been often used in our country, was used as the valid test (reference/golden/t) in order to assess the NHP's validity in menopausal women. For the validity examination, only the total scores of both measurements could be compared since the subcategories of SF 36 and those subcategories of NHP did not match entirely. As a result, it was discovered that the sensitivity of the NHP was 77.8% and its selectivity was 76.0% (Table 3).

Results about the NHP-reliability

Test-retest method was utilized so as to evaluate the NHP-reliability. As a conclusion of the measurements conducted with one week intervals, reliability coefficients of all the statements in NHP, subcategories and total scores that were obtained by the Pearson Moment Multiplication Correlation Coefficient were found to be significant. The coefficients of test-retest-reliability of NHP's subcategories showed changeable scores between 0.86 and 0.95. The physical activity and social isolation dimension was 0. 87; pain and sleep dimension

was 0. 94; energy dimension was 0.86; emotional reaction dimension was 0.95; and the total score dimension was 0.97 (Table 4). However, when analyzed one by one, it was seen that there were items, dimensions of which were below 0.70. It was discovered that the correlation coefficients of NHP statements changed between 0.54 and 0.98 (Table 5). It was observed that the lowest correlation coefficients were the statements of "it is difficult for me to dress by myself" (0.54), "I feel so angry" (0.59), "it is hard for me to reach to some objects, some places" (0.59), and "I always feel tired" (0.64). It was found that the highest correlation coefficients were the statements of "I wake up depressed and unhappy" (0.98), "I can walk only at home" (0.92), "I have always got pains" (0.91), "It seems to me that life is not worth living." (0.91), "My night sleep is terrible" (0.91) and "I have always in pain while sitting" (0.90).

DISCUSSION

Although the first condition for a measurement to be valid is reliability, reliability can never guarantee validity. Hence, another significant matter is the validity of the measurement as well as its reliability. Among the validity indicators of a measurement are sensitivity and selectivity. No matter how much one desires that the sensitivity and selectivity of a screening test should be 100%, it cannot be guaranteed (Tezcan, 1992; Gözüm and Aksayan, 2003). In the present study, since the subcategories making up the contents of the SF 36 and those of the NHP did not match and because there was not another measurement as the golden test, the comparisons were made between the total scores of the both measurements. The correlation between the total scores of both measurements was found to be 0. 64.

Pearson Moment Multiplication Correlation Coefficient" is shown by "r". "r" absolute value indicates the strength of a linear relation and the highest value for "r" may be 1 (Gözüm and Aksayan, 2003; Karasar, 2002; Ergün, 1995; Sümbüloğlu and Sümbüloğlu, 2000).

It is thought that the relation is weak if the correlation coefficient is between 0.0 to 0.5; however the relation is strong if the correlation coefficient is between 0.50 to 1.0;

Table 3. The comparison of the results of NHP and SF 36 applied to menopausal women.

New test (NHP)	According to SF 36 results		Total
	Those who have a bad life quality (+)	Those who have a good life quality (-)	
Those who have a bad life quality (+)	35	11	46
Those who have a good life quality (-)	10	35	45
Total	45	46	91

Table 4. The results of test-retest reliability coefficients of subcategories and total scores of NHP applied to menopausal women.

NHP section (Subcategories)	r
Physical mobility	0.87
Energy level	0.86
Pain	0.94
Sleep	0.94
Social Isolation	0.87
Emotional Reactions	0.95
Total score	0.97

Table 5. The coefficients of test-retest and test reliability of NHP.

Item no	r	Item no	r
NHP-1	0.64	NHP-20	0.87
NHP-2	0.78	NHP-21	0.75
NHP-3	0.67	NHP-22	0.82
NHP-4	0.89	NHP-23	0.86
NHP-5	0.79	NHP-24	0.69
NHP-6	0.87	NHP-25	0.54
NHP-7	0.59	NHP-26	0.75
NHP-8	0.71	NHP-27	0.84
NHP-9	0.79	NHP-28	0.86
NHP-10	0.92	NHP-29	0.91
NHP-11	0.71	NHP-30	0.70
NHP-12	0.88	NHP-31	0.86
NHP-13	0.80	NHP-32	0.91
NHP-14	0.81	NHP-33	0.91
NHP-15	0.85	NHP-34	0.75
NHP-16	0.74	NHP-35	0.65
NHP-17	0.87	NHP-36	0.87
NHP-18	0.59	NHP-37	0.98
NHP-19	0.71	NHP-38	0.90

and the closer the coefficient is to 1.0, the stronger the relation (Ergün, 1995).

As a result, it was discovered that the correlation between the total scores of SF 36 and NHP was 0.64, the sensitivity of the test was 78% and the selectivity of the test was 76% compared to SF 36. Considering these results, the NHP may be said to be a measurement with above-average validity for menopausal women.

Reliability means that a measuring device provides measurement results that are sensitive, consistent and determined. In other words, it is expected that the scores that individuals get on a test –which is then applied to a

group or an individual- are consistent and similar whenever the test is conducted (Gözüm and Aksayan, 2003).

In the measurements carried out, three reliability criteria are expected and these are:

1. An invariability criterion in time (continuity).
2. Agreement among the independent observers.
3. Internal consistency (Tezcan, 1992; Gözüm and Aksayan, 2003; Karasar, 2002).

All of these determine the validity or the reliability of a measurement. Consistency is described as conformity between the results of the observations and measurements reconducted under the same conditions and by the same researcher on the same subjects. It is expected that the consistency in studies that are directed with the same technique and with caution should be high (theoretically 100%) (Tezcan, 1992).

The correlation coefficient of the test-retest method for the newly-developed measurements is accepted as 0.70, whereas it should be at least 0.80 for the previous measurements that have been tested in the studies and also, the reliability of all sub measurements should be calculated (Gözüm and Aksayan, 2003). The closer reliability coefficient, which is symbolized with "r", of a measurement to 1.0, the stronger its reliability. Accordingly, the coefficients of test-retest reliability of NHP were satisfying. At the same time, the coefficients of test-retest reliability of NHP were consistent with those study results conducted with the same measurement in the past (Pınar, 1995; Güzeloğlu, 1996).

The statements that were difficult to understand or the meaning of which depended on time and situation were as follows: "It is difficult for me to dress by myself" (0.54), "I feel so angry" (0.59), "it is hard for me to reach to some objects, some places" (0.59), and "I always feel tired" (0.64).

The statements that were understood best and correctly were as follows:

"I wake up depressed and unhappy" (0.98), "I can walk only at home" (0.92), "I have always got pains" (0.91), "It seems to me that life is not worth living." (0.91), "My night sleep is terrible" (0.91) and "I have always got pain when sitting" (0.90).

Conclusion

It was concluded that the NHP, in the psychometric assessment of life quality measurement, was a measurement with above-average validity on menopausal women in Turkish society. The total score of the NHP in test-retest and test reliability dimension was 0. 97. It may be said that the Pearson Moment Multiplication Correlation Coefficient of all the statements, sub dimensions and total scores were satisfying. As a result of this research, it is recommended that the NHP be used for the life quality measurement of menopausal women.

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