Standardization of Three Hope Scales, as Possible Measures at the End of Life, in Iranian Population

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Abstract

Background: Hope is an essential and dynamic life force that grows out of faith, is supported by relationships, resources and work circumstances, which lead to the energy necessary to live for a desired future. Hope gives meaning and happiness. Four central attributes of hope are: experiential, spiritual, relational thought, and relational process.

A sound instrument to measure hope, which should be theoretical base, fairly vigorous psychometric and user-friendly, would be a useful complement to interviews for assessing hope in palliative care. Assessment of 'hope' is a necessary foundation for enabling the implementation of various intervention strategies to foster hope especially in cancer patients and their family members.

There is no suitable instrument to measure hope in palliative care for Iranian patients; therefore the aim of this study was to assess the understandability, reliability, validity and superiority of three relevant instruments to measure hope.

Methods: Three questionnaires including the Herth Hope Index (HHI), Herth Hope Scale (HHS), and Miller Hope Scale (MHS) alongside with a generic health-related quality of life tool (EQ-5D) were completed by 70 normal randomly selected individuals aged 14-73 years.

Result: Cronbach's alpha was 0.76 for HHS, 0.67 for HHI and 0.81 for MHS, indicating satisfactory internal consistency. Concurrent criterion-related validity was assessed by calculating the correlations of the HHS and the MHS (r = 0.43), HHS and HHI (r=0.49) and MHS and HHI (r=0.62), at <0.001 significance level. MHS discriminated significantly better most of EQ-5D components including anxiety and depression, pain, personal and usual activities.

Conclusions: Finding suggested that these instruments have satisfactory reliability and validity to be used in Iranian population. Miller Hope Scale showed superiority among these tools.

Keywords: Hope; Validity; Reliability; Standardization

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Introduction

Hope is an essential but dynamic life force, which is supported by relationships, resources and work, learning and thinking, and results in the energy necessary to work for a desired future. Hope gives meaning and happiness. People also express hope in family, friends, or community[1]. Hope can enrich the lives and enable individuals to look beyond their current pain, suffering, and turmoil. Loss of hope and a narrowing of expectations and goals for life are believed to reduce QOL[2].

Many definitions and descriptions of hope have been presented in the scientific nursing literature, indicating poor agreement about the concept of hope [3, 4].

A distinction between 'generalized' and 'particularized' hope was made and different dimensions of hope were identified: an affective dimension, including various sensations and emotions related to hope; a cognitive dimension, pointing to a person's way of thinking, interpreting and wishing in relation to hope; a behavioural dimension, including the actions

taken in the physical, psychological, social and religious realm to achieve a hope or affect the outcome. The fourth dimension is called the affiliative dimension, overlapping the social and religious realms of the behavioural dimension, focusing on relations to the self, to other persons, and even to God. Finally, the temporal dimension is grasping a person's experience of time in relation to hope, and the sixth dimension includes a person's whole life situation, the context of which a person is a part and which influences the experience of hope [5]. A meta-analysis of the ontological and epistemological foundations of hope showed that there is an emphasis on viewing hope as a dynamic process between hope and despair and that hope may be described as an experience, an emotion or a need[6] . By using a concept analysis, seven critical attributes of hope were found: future orientation, positive expectation, intentionality, activity, realism, goal-setting and inter-connectedness [7].

Four critical attributes of hope that are commonly mentioned by different authors are: focus on the future, energy (action orientation), future redefinition, and feeling of uncertainty, uneasiness or discomfort[8] . In every interview people also expressed a general hope for a better future. One always lives with that hope that one day he can excel, can change, and can make the situation of life better[1] .

There is an inseparable relationship between hope and faith in God. For some informants, faith and hope may be the same, where faith maintains hope alive in each person and is the source of hope at a deep and fundamental level[9] . Spirituality and hope are also completely tangled to extent that both are correlated and perhaps can predict each other [9-14] . Although the concept of hope is universal, it is diverse among different cultures. Somebody expresses hope about education, career, education, or that of their children.

Hope at the End of Life

Cancer as an overwhelming disease may strongly influence on patients' and their caregivers' hope. Stressful events such as pain, disease metastasis, recurrence, severity, and burden on the caregivers may have an impact on patients' hope levels, [15, 16], which in turn may alter patients' quality of life [17] . Hope -at the end of life- is constantly affected by the caregivers and particularly medical staff, [18],

therefore recognising and measuring hope and its components may be crucial in offering daily care to cancer patients.

Measuring Hope

According to the fact that use of instruments to measure hope in palliative care requires a strong theoretical basis, sound psychometric properties and user-friendliness[19] , we intend to select the most widely used 'hope' scales in the literature [19-21] to find out the psychometric properties of each scale and to nominate the selected tool(s) to be used in palliative care settings.

The instruments developed to measure hope in the 1970s were based on a one-dimensional definition of hope [22, 23]. When hope was further explored in clinical research, instruments with a multidimensional conceptualization were developed, for example, the Nowotny Hope Scale (NHS) [24], MHS [25] and HHS [21]. Herth designed the HHI [19], an adaptation of HHS, specifically for use in clinical settings, both for capturing the multidimensionality of hope and for identifying changes of hope over time [26].

Materials and Methods

This study is a descriptive cross-sectional research, to standardize 3 selected hope questionnaires. At the primary stage, forward translation, backward translation, and expert discussion were done to assess the face validity and understand ability of the tool. At first the Persian version of the battery was completed for 10 healthy people, and they were requested to express their idea and deduction about questions. The battery of 'hope questionnaires' was consisted of the Miller Hope Scale (40 items), Herth Hope Index (12 items), Herth Hope Scale (30 items) and EQ-5D questionnaire in 3 sections (current health state, EQ VAS, and demographic questions), which were completed by healthy people in presence of one of the researchers (NA).

The Miller Hope Scale (MHS)

The MHS was developed by Miller [20] , which is a 40-item scale with a 5-point Likert format, measuring degree of agreement. Scores range from 40 to 200, the higher the score, the higher the level of hope. There are three excessive questions called as illness subscale items, which are not part of Miller Hope Scale and should be excluded from analysis.

MHS showed relatively high construct and concurrent validity compared to other well established tools. In factor analysis, Miller found that

the items could be grouped in three components: I, Satisfaction with self, others, and life; II, Avoidance of hope threats; and III, Anticipation of a future [20]. The MHS has been used in various studies and different settings [20, 26-32], in particular, the best predictors of hope in a group of patients with cord injuries were self-esteem, social support and education[31].

The Herth Hope Scale (HHS)

The HHS, constructed by Herth [21], is a 30-item scale with a 4-point, measuring degree of agreement, where 1 depicts as "never applies to me" and 4 as "often applies to me". Scores range from 30 to 120, the higher the score, the higher the level of hope. Internal reliability coefficients have been reported up to 0.94 with a three-week test-retest reliability of up to 0.91 and divergent validity of -0.69 with the Beck Hopelessness Scale. The multidimensionality of the construct was supported through the factorial isolation of three subscales: temporality and future, positive readiness and expectancy, and interconnectedness[21].

The Herth Hope Index (HHI)

The HHI [19] is a shortened version of the HHS, including the three subscales from the original HHS. The HHI is a 12-item Likert scale, arranged with scores from 1 to 4, where 1 is 'strongly disagree' and 4 is 'strongly agree'. The scores may vary from 12 to 48; the higher the score, the higher the level of hope. Excellent psychometric features has been reported by the convener of the tool: Chronbach's alpha coefficient 0.97, test-retest reliability (2 weeks) of 0.91, and the concurrent criterion validity with the HHS was 0.92, with the Existential Well-Being Scale (r = 0.84) and with the Nowotny Hope Scale (r = 0.92) [19, 21]. In another study HHI internal reliability was 0.84 in adolescents and 0.78 for young cancer patients, respectively [33].

HHI has been used in various studies to assess hope in acute and chronic diseases specially cancer from diagnosis to end of life care, with an established construct and content validity and internal reliability [2, 19, 34, 35]. HHI also showed good correlation with MHS (r=0.82) in a study to validate the Swedish version of this instrument[26]. Exploratory factor analysis (EFA) conducted by Higginson and Donaldson revealed that the twelve items could be loaded in three factors representing: 'positivity' (items 1, 8, 10, 11, 12), 'goals' (items 2 and 4), and 'support loneliness' (items 3, 5, 6, 7, and 9) [36], while in another study only two factors were loaded namely: 'reconciliation with life situation' and

'religiosity'[26]. Meanwhile by using Beck's Hopelessness Scale with the HHI, the divergent validity was supported (r = -0.73) [26].

EQ-5D

EuroQol-5D is a standardized instrument for use as a measure of health outcome [37]. Applicable to a wide range of health conditions and treatments, it provides a simple descriptive profile and a single index value for health status [38-40]. The EQ-5D descriptive system comprises 5 dimensions of health (mobility, self-care, daily activities, pain/discomfort anxiety/depression). Each dimension comprises three levels (no problems, some/moderate problems/extre me problems). A unique EQ-5D health state is defined by combining 1 level from each of the 5 dimensions.

Sampling and Data Analysis

Data were analyzed using descriptive statistics, Chi-square, non-parametric method, Pearson's correlation, internal consistency and principle component analyze. By using the 10 first persons' feedbacks, we did the necessary corrections in questions and the final corrected questionnaire was completed by 70 ordinary people who were recruited by convenient sampling method who consented to take part in the study.

Results

Participants' age ranged between 14-73 years with a mean equal to 36.01 (SD=15.57). Forty three percent were female and 66 percent married. Eleven percent of the participants were illiterate and nearly a quarter had university training; 40% were employed and 29% smoker. 41 percent expressed past medical history of a common condition.

Concurrent validity of hope questionnaires was assessed by measuring the correlations of MHS with HHS (r=0.43, P<0.001), MHS and HHI (r=0.62, P<0.001) and HHS with HHI (r=0.49, P<0.001). Internal consistency was calculated for each tool, where HHS had the highest. (Chronbach's alpha: 0.81), details are demonstrated in table-2. MHS had the highest correlation with EQ-5D among the tools. There was a positive association between MHS with smoking (P=0.01), anxiety and depression (P=0.01), pain (P=0.03), self care (P= 0.01), and accomplishment of normal activities (P= 0.05). There was no positive association between MHS and EQ-5D VAS health measure, while HHS was only associated with this component (P=0.03) and HHI with anxiety and depression (P=0.03). No statistically significant relationship was found

Table 1. Demographic features

Demographic information		Number	Percent
Age	<30	29	41.4
	30-50	25	35.7
	>50	16	22.9
Gender	Female	30	43
	Male	40	57
Married situation	Married	46	66
	Single	24	35
Education	Illiterate	8	11.4
	Primary	21	30
	Diploma	25	35.6
	BSc and higher	16	23
Occupation	Employed	28	40
	Student	14	20
	Retired	9	13
	Unemployed and housewife	19	27
Smoking	Smoking	20	29
	Non smoking	50	71
Health situation	Ill health	29	41
	Healthy	41	59

Table 2. Descriptive statistics of the three hope instruments

Statistical feature	MHS Summary score	HHI Summary score	HHS Summary score
Mean (SD)	151.61 (15.7)	35.66 (3.57)	91.94 (8.73)
Median	151.50	36.00	92.50
Minimum	112	26	63
Maximum	187	47	111
Variance	246.6	12.8	76.3
Chronbach's alpha	0.81	0.67	0.76

Table 3. Correlations between hope questionnaires

	MHS	HHI	HHS
HHS	r=0.43 (p<0.001)	r=0.49 (p<0.001)	
HHI	r=0.62 (p<0.001)		r=0.49 (p<0.001)
MHS		r=0.62 (p<0.001)	r=0.43 (p<0.001)

between hope questionnaires and demographic features. Exploratory factor analysis for HHI revealed three components, where items 1, 2, 4-8, and 12 were loaded in the first component (Table 5).

Discussion

Hope is an important factor in palliative care, which requires appropriate instruments with strong theoretical basis, sound psychometric properties and user friendliness[26] .

According to the findings presented in this paper, MHS is more preferred and suitable than HHS and HHI in Iranian population, although all three instruments have satisfactory reliability and validity to use in chronic and devastating diseases such as cancer.

The aim of this study was to verify the understandability and explore other psychometric features of three hope scales in a convenient sample of Iranians, where we found an acceptable internal reliability (Table 2), which were compatible to other studies cited in this paper [21, 33]; this is barely due to the limited sample size. However, construct validity of the three scales in respect to the inter-correlation of these tools was well-established specifically for MHS. In present study only HHI had a significant

relationships with the anxiety and depression in EQ-5D (r= 0.48, p<0.05).

In our study the only hope tool that had a significant correlation with the visual analogue scale of the EQ-5D, which represents general health of the respondents, was the HHS (p<0.05), though was less than other studies which reported correlation of HHI and overall health in general population[41] .

Ballard and colleagues found that administering HHS to newly diagnosed and recurrent patients suffering from cancer, contrary to expectations, patients with newly diagnosed and recurrent cancer did not differ in regard to their level of hope, however, significant differences may exist related to the type of hope utilized. Married patients and male patients experienced higher levels of hope. Also other themes in response to the open-ended question were found regarding family support, nonfamily support, faith, outlook, and health professionals/care[42] .

This study suffered from limitations, especially inadequate sample size, and insufficient cancer patients. Although it is fairly common to test the newly developed or translated instruments in small sample of patients or healthy people, results should be taken cautiously and application of the hope tools in larger samples may change the psychometric properties that are reported here. Another study

Table 4. Correlations between hope questionnaires and EQ-5D questionnaires

		HHI(P-value)	HHS(P-value)	MHS(P-value)
EQ-5D	Anxiety& Depression	r=-0.25 (0.03)	r=-0.18 (0.1)	r=-0.48 (0.001)
	Pain	r=-0.13 (0.2)	r=-0.05 (0.6)	r=-0.24 (0.03)
	Self duty	r=-0.09 (0.4)	r=-0.21 (0.06)	r=-0.28 (0.01)
	Normal activity	r=-0.05 (0.6)	r=-0.21 (0.3)	r=-0.29 (0.01)
	EQ-5D VAS	r=0.21 (0.08)	r=0.24 (0.03)	r=0.14 (0.2)
Demographic	Age	r=0.03 (0.7)	r=0.06 (0.5)	r=-0.007 (0.9)
	Gender	r=0.006 (0.7)	r=-0.009 (0.9)	r=-0.07 (0.5)
	Smoking	r=0.09 (0.4)	r=0.001 (0.9)	r=0.27 (0.02)
	Education	r=0.08 (0.5)	r=0.05 (0.6)	r=0.22 (0.05)

Table 5. Principle Component Analysis of HHI

	Component		
	1	2	3
1. I have a positive outlook toward life.	0.762	-0.012	0.002
2. I have short and/or long range goals.	0.551	0.078	0.032
3. I feel all alone.	-0.306	0.691	-0.099
4. I can see possibilities in the midst of difficulties.	0.688	-0.283	-0.008
5. I have a faith that gives me comfort.	0.584	0.202	0.391
6. I feel scared about my future.	-0.556	0.162	0.275
7. I can recall happy/joyful times.	0.610	-0.292	-0.146
8. I have deep inner strength.	0.803	-0.178	0.091
9. I am able to give and receive caring/love.	0.460	0.297	0.625
10. I have a sense of direction.	0.491	0.274	-0.614
11. I believe that each day has potential.	0.365	0.636	-0.131
12. I feel my life has value and worth.	0.571	0.284	-0.071

focusing on cancer patients is currently being

Our findings suggest that these instruments have satisfactory understand ability, reliability and validity characteristics, which enables the researchers to use the tools, in particular the Miller Hope Scale, to measure hope in Iranian people and specifically in cancer patients who may suffer more from lacking this fundamental feature of human life.

Acknowledgment

Conflict of Interest

Nothing to declare.

Authors' Contribution

NA and MAL designed the study, analysed the data and drafted the manuscript, NA collected the data, MAL re-analysed and re-wrote the paper.

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