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Effect of educational level and marital status on health-related quality of life using Duke health profile in population of Tetouan (Morocco)

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ABSTRACT: Background: Health-related quality of life (HRQOL) assessment and the determinants affecting it in the general population are essential to determine its needs and expectations. This work aims to evaluate the effect of educational level and marital status on HRQOL.
Methods: Duke Health Profile was administered to a sample of 385 people chosen by quotas, living in Tetuan city in northern Morocco.
Results: The Duke profile dimensions measured depend on the educational level, some of which tend to increase with studies increasing. Illiterate people have a bad perception of HRQOL for all dimensions, as opposed to those with high level of education. Marital status greatly influences the Duke profile dimensions. They was married people who express better HRQOL followed by singles, however divorced and especially widowed people had a bad perception of it.
Conclusion: They was illiterate people, divorced and widowed people who perceive themselves in poor health and have a bad perception of HRQOL.

KEYWORDS: health-related quality of life, Tetouan, duke health profile, educational level, marital status.

1 BACKGROUND

Since the 1970s, the Quality of Life (QoL) analysis has begun to develop to describe and measure the impact of different factors on people's lives from an emotional, social and physical point of view. The most consensual definition of QoL remains that of WHO [1], which is " *an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns*."

The concept of QoL is used in many scientific disciplines (politics, economics, philosophy, ethics, etc.) even in the medical field, we talk about "health-related quality of life" (HRQoL). This notion refers to a multidimensional concept integrating all concepts of quality of life related to the physical, psychological and Social health and which are influenced by disease and / or medical actions [2,3,4].

The HRQoL measurement is an essential complement to the medical assessment [5]. Thus, national policies in developed countries increasingly focus on HRQoL studies to assess how patients live daily their disease and treatments and provide the clinician with valuable indicators to guide him in taking care of the sick [5]. On the other hand, the assessment and monitoring of HRQoL in the general population has multiple potential applications, such as monitoring health status, assessing the performance of public health policies, identifying populations at risk or helping in the development of interventions [6,7].

The subjectivity of HRQoL can be influenced by the person and his socio-demographic variables [8]. This is the case of sex [9], age [10], education [11], marital status [12], income [13], chronic diseases [14], location [15,16], psychosocial factors [17,18] and even lifestyle [19]. Measuring and identifying the variables that affect HRQoL are, therefore, crucial and essential for the development of appropriate and effective intervention strategies by health professionals and decision-makers.

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The assessment of HRQOL in the general population is based on the use of measuring instruments. According to the application area, there are generic instruments applicable under various conditions and in the general population as the SF-36 [20] and the health profile of Duke [21], and Specific instruments of pathology or a state of health.

Assuming that the perception of health is influenced by several determinants, and that HRQOL studies in Morocco are rare, this paper aims to studying the effect of educational level and Marital status on the HRQOL in the general population of Tetuan city (northern Morocco) through a survey using the Duke health profile.

2 METHODS

2.1 SAMPLE

For a population of 318,698 individuals, a confidence interval of 95% and an error margin of 5%, we calculated the sample size using the calculator Rasoft [22], this has resulted in 385 people. The survey was conducted on people over 16 years old living in Tetuan city (northern Morocco). We have chosen the quota sampling method, which is the non-probability sampling method best known and most used [23]. The selected quotas are based on proportions of the mother population in terms of gender, age and level of study.

2.2 SURVEY

The questionnaire consists of two parts: a part corresponding to the socio-demographic data (age, sex, level of study) and the other to Duke's health profile.

The Duke was developed in the US with a first version which had 63 items (Duke-Unc Health Profile) [24] and was shortened for a version to 17 items [21]. This is a generic self-administered instrument for measuring the HRQOL. The modalities of response to the different items are constituted by a Likert scale with three propositions. Zero, one or two points are assigned to each item according to the checked box [21].

The items are grouped into several dimensions: physical health, mental health, social health, perceived health, disability, anxiety, pain, self-esteem and depression. An overall score of general health is calculated by adding the physical, mental, and social health dimensions. Another combined score Anxiety-Depression (Duke A-D) is calculated by combining the dimensions of anxiety and depression. Scores range from 0 to 100, with 100 being the best score of HRQL and 0 is the worst for the six dimensions of health, whereas the significance is reversed for 5 dysfunction scores.

The Duke, through its duly validated properties [25], is a short questionnaire that can quickly explore the dimensions of health, such as self-esteem, and promotes psychic side [26,27] with dimensions of dysfunction such as anxiety and depression that are not proposed by other tools [28].

2.3 DATA PROCESSING AND STATISTICAL ANALYSIS

Data entry and scoring of different dimensions are made using the Sphinx version 5. We modeled a data sheet with the algorithms to calculate means of different health scores. When we cross a nominal variable with another numerical, we use a test of means comparisons: test t of Student. The significance level is 5%.

3 RESULT

3.1 PARTICIPANT'S CHARACTERISTICS

This study involved 385 people, of whom 196 (50.9%) were women and 189 (49.1%) were men. The range in age was from 16 to 80 years, with an average age of 36.4 years. One third (33.2%) of the respondents are illiterate and 47.8% are married (Table 1).

Table 1. Socio-demographic characteristics of respondents

Gender		**N**	**%**
	Women	196	50.9
	Men	189	49.1
Age		Mean	SD
		39,4	14.6
Education status		N	%
	Illiterate	128	33.2
	≤Middle School	90	23.4
	Secondary school	98	25.5
	University level	69	17.9
Marital status		N	%
	Single	161	41.8
	Married	184	47.8
	Divorced	22	5.7
	Widowed	17	4.4
	not determined	1	0.3

3.2 COMPARATIVE STUDY BY EDUCATIONAL LEVEL

The different dimensions of HRQOL measured depend on the educational level (Table 2). Indeed, the dimensions of physical, mental, general and perceived health tend to increase with educational level increasing. Illiterate people have the worst HRQOL scores for all dimensions. They have significantly lower scores for physical (56.6; p≤0,01), mental (54.2; p≤0,01), social (56.7; p <0.05), general (55.5; p≤0,01), perceived health (63.1; <0.05) and self-esteem (63.2; p <0.05), and significantly high scores for anxiety (45.6; p≤0,01), depression (47.5; p≤0,01), anxiety-depression (46.3; p≤0,01), pain (48.4; p ≤ 0.01) and disability (73.4; p≤0.01).

Table 2. Duke scores means according to educational level

Dimensions	**Illiterate**	**≤Middle School**	**Secondary school**	**University level**
Physical health	56.6**	69.2	69.7	70.2
Mental health	54.2**	63.5	63.5	66.1
Social health	56.7*	63.4	62.2	65.1
General health	55.5**	65.0	64.3	66.9*
Perceived health	63.1*	75.8	77.3	80.2
Self esteem	63.2*	71.6	68.2	72.5
Anxiety	45.6**	35.7	38.2	35.3
Depression	47.5**	36.4	37.8	30.7**
Anxiety-depression	46.3**	35.8	37.4	33.4*
Pain	48.4*	41.0	35.4	36.0
Disability	73.4**	38.8*	62.5*	9.4**

** Significant difference p<0.05*
*** Very significant difference p≤0.01*

However, people with higher educational level express a better HRQOL for the majority of dimensions. They have significantly high scores for general health (66.9; p <0.05), and significantly lower scores for depression (60.6; p <0.05), anxiety-depression (33, 4; p <0.05) and disability (9.4; p≤0.01).

3.3 COMPARATIVE STUDY BY MARITAL STATUS

In general, the Duke scores according to marital status (Table 3) shows a difference between the different states. Indeed married people express a better HRQOL followed by singles, however divorced, and especially widowed people have a bad perception of it. Married people obtained highly significant scores for mental health (65.91, p <0.05), social health (66.5,

p≤0.01), and self-esteem (73.84; P≤0.01). Anxiety (34.01, p <0.01), depression (34.25, p <0.05) and anxiety-depression (33.97; p < 0.01).

Table 3. Duke scores means according to marital status

Dimensions	Single	Married	Divorced	Widowed
Physical health	70*	64.2	60.5	37.7**
Mental health	58.55	65.91*	49.09*	41.88**
social health	57.32	66.5**	52.73*	51.76*
General health	61.35	65.2	53.68**	43.63**
Perceived health	74.1	74	68.2	52.9
Self esteem	63.99	73.84**	59.55*	56.25**
Anxiety	43.15	34.01**	44.77	57.47**
Depression	41.63	34.25*	48.18	63.53**
Anxiety-depression	41.99	33.97**	47.73*	59.65**
Pain	36.3	43.1	47.7	58.8*
Disability	53.8	46.2	66.7	61.8

** Significant difference p<0.05*

*** Very significant difference p≤0.01*

Singles come second with significantly higher scores for physical health (70; p <0.05).

Divorced people had significantly lower scores for mental health (49.09, p <0.05), social (52.73, p <0.05), general (53.68, p≤0.01) and self-esteem (59.55; p <0.05), but the anxiety-depression score is highly significant (47.73; p <0.05).

They were the widowed people who had the lowest HRQOL scores and this was significant for physical (37.7, p≤0.01), mental (41.88, p≤0.01), social health (P <0.05), and self-esteem (56.25; p <0.01). However, they perceive significantly high levels of anxiety (57.47; p≤0,01), depression (63.53; p≤0,01), anxiety-depression (59.65; p ≤ 0.01) and pain (58.8, p <0.05).

4 DISCUSSION

4.1 COMPARATIVE STUDY BY EDUCATIONAL LEVEL

All measured dimensions of HRQOL depend on educational level, some of which tend to increase with its increase (physical, mental, general and perceived health). All measured the majority of Duke profile dimensions depend on (physical, mental, general and perceived health). Illiterate people have significantly lower HRQOL scores for all dimensions of physical, mental, social, general, perceived health and self-esteem, as well as significantly high scores for all dimensions of dysfunction. Contrariwise people with university level express better HRQOL for most dimensions, with a significantly high score for general health, and significantly lower scores for depression, anxiety, depression and disability.

As for a study carried out on the population of Tetouan using SF-36, it was the illiterate people who have a poor perception of HRQOL [29]. It is the same in France. Those with the highest levels of qualifications are getting the best health scores, except for the anxiety score that appears independent of educational level, against those with the lowest qualifications have bad perception of their health [30]. The impact of socio-economic status, and in particular educational level, on HRQOL has been shown by several studies and there is a better perception of HRQOL for those with a high level educational [31,32,33,34,35].

Education is one of the most determinant elements in the individual's living conditions and health status, enabling him to acquire more appropriate attitudes and skills to solve the difficulties of life [36]. It also provides better access to information on health, nutrition and lifestyle education. Those who are least literate are also the most economically vulnerable people who have the least access to care, screening and the benefits of major prevention campaigns [37].

They are illiterate people who perceive themselves in poor health and have a bad perception of aging [38]. Therefore, lack of education is still a source of current and future vulnerability to Health [39].

4.2 COMPARATIVE STUDY BY MARITAL STATUS

In general, the majority of Duke profile dimensions depend on marital status. Married people express better HRQOL followed by singles, however divorced and especially widowed people have a bad perception of it. Similar results were found

for the study of HRQOL in this population using the Sf-36 [29]. Also These results agree with those of France, where living in a couple improves all major scores, such as physical, mental and social (ie general) health or anxiety, depression and self-esteem [30].

Married people perceive their health better, this difference is significant for the dimensions of mental and social health, self-esteem, anxiety, depression and anxiety-depression. People in couples, suffer less from depression and suicidal risk than divorced or separated ones [40]. Conjugal environment will have undoubtedly a positive impact on lifestyle, health status and HRQOL. Several studies have explained this difference [41,42,43] that married people are supported by their spouses who can positively influence their health behaviors; they usually have more material resources, and having children's responsibility encourages healthier behaviors without forgetting the support and affection provided by these children.

Singles come second with significantly higher scores for physical health. This seems logical since singles are young people with an average age of 25.5 years; therefore, they enjoy good physical health [44,45].

Divorced people scored significantly lower for mental, social, general health and self-esteem, while the anxiety-depression score was highly significant. Divorce is an act which is accompanied with stress, instability, loneliness, hurt feelings, and also frequent hostilities. This transition period is often associated with health problems [46].

They were the widowed people who significantly had the worst HRQOL scores for the physical, mental, social, general health, self-esteem, anxiety, depression, anxiety-depression and pain. The widowed of our study are generally seniors who are over 60 years of age. These elderly people have lost psycho-emotional and physical support, assistance and comfort of their spouses, which will have a negative impact on their lifestyles, health status and HRQOL [38,47].

5 CONCLUSION

The Duke profile dimensions measured depend on the educational level, some of which tend to increase with its increasing. Illiterate people have significantly lower HRQOL scores for all health dimensions, as well as, significantly, higher scores for all dimensions of dysfunction. However, people with high level of education (university) express a better HRQOL for several dimensions.

Marital status greatly influences the dimensions of the Duke profile. They are married people who express better HRQOL followed by singles, however divorced and especially widowed people have a bad perception of it, with the worst scores for physical, mental, social, general, self-esteem, anxiety, depression, anxiety-depression and pain.

It is true that Morocco has been successful in improving health and economic conditions of the general population over the last twenty years, as evidenced by a number of indicators, but health inequalities between groups remain a major challenge. Therefore, improvement of living conditions and adaptation of health strategies according to people's need, including lower institutional level, divorced and widowed people are necessary for a better management of these vulnerable groups.

WHAT IS ALREADY KNOW ON THIS TOPIC

- The HRQoL measurement is an essential complement to the medical assessment
- The subjectivity of HRQoL can be influenced by the person and his socio-demographic variables
- HRQOL studies in Morocco are rare

WHAT THIS STUDY ADDS

- Education is one of the most determinant elements in the individual's living conditions and health status
- Marital status greatly influences the dimensions of HRQOL, divorced and widowed people have a bad perception of it
- Health inequalities between groups remain a major challenge in Morocco

LIST OF ABBREVIATIONS

QoL: Quality of Life

HRQOL: Health-related quality of life

Sf-36: 36-Item Short Form Survey Instrument (SF-36)

COMPETING INTERESTS

The authors declare that they have no competing interests

AUTHORS' CONTRIBUTIONS

All authors have read and agreed to the final version of
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the management of the case.

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