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Original article

Health related quality of life measures by demographics and common health risks, Jordan 2004

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Abstract

Objective: To measure health-related quality of life (HRQOL) in Jordan

Methods: A multi-stage sampling design was used to select households where an adult 18 years of age or older, selected at random, was interviewed. Four HRQOL questions, initially developed by the U.S. CDC, related to mental and physical health were included in the questionnaire and overall unhealthy days were calculated. HRQOL measures were compared to selected chronic conditions and risk factors.

Results: Older adults (aged 65 and over), females, persons who were illiterate or with only primary education, and persons with monthly income less than $ 140 reported the highest percentage of fair or poor health and ≥ 14 overall unhealthy days compared to persons without these characteristics. A high percentage of persons with asthma (33 %), hypertension (37 %), high blood cholesterol (37 %), and diabetes (47 %) also reported fair and poor health.

Conclusion: Demographic characteristics, the presence of a chronic condition or a chronic disease risk factor are important determinants of mental and physical well-being in Jordan and should be taken into account when planning public health interventions or prevention and promotion programs.

Keywords: Quality of life – Health Status Indicators – Jordan.

Introduction

Measuring self perception of physical and mental health, or health related quality of life (HRQOL), in a population can help determine the burden of preventable disease, identify subgroups with poor physical or mental health, and monitor the effectiveness of broad public health and community interventions.[1,2] Since 2002, the Jordan Ministry of Health (MOH) with the assistance of the U.S. Centers for Disease Control and Prevention (CDC) has included HRQOL measurements in its behavioral risk factor surveillance system. This report summarizes the HRQOL findings from the 2004 BRFS in Jordan. The results, the first of its kind in the Arab world, highlight vulnerable populations and demonstrate the importance of HRQOL measures in assessing general well-being of individuals and populations.

Methods

In 2004, the MOH used a multistage sampling design to conduct a nationally representative survey of adults aged 18 years or older. The master sampling frame of census enumeration blocks from the 1994 Jordan Census was used to select the primary sampling areas, or blocks. This sampling frame was stratified by governorate, major city, other urban area, and rural area into 29 strata. Within each stratum the sample blocks were selected systematically with probability proportional to size. Eight random households were selected from each block. In each house selected, one adult aged 18 or older was chosen at random and interviewed face-to-face in Arabic by trained

Table 1. Health Related Quality Of Life Measures by Socioeconomic and Demographic Characteristics – Jordan, 2004.

	n*	Fair or Poor (%)	C.I.** (%)	≥14 Overall Unhealthy Days (%)	(%)	≥14 Physically Unhealthy Days (%)	C.I. (%)	≥14 Mentally Unhealthy Days (%)	C.I. (%)	≥14 Activity Limitation Days (%)	C.I. (%)
Total	3342	13.3	12.0–14.5	11.0	9.8–12.3	5.0	4.2–5.9	5.7	4.7–6.6	2.7	2.1–3.3
Age group	3342										
18–34	1394	3.5	2.5–4.5	7.0	5.7–8.4	2.0	1.2–2.7	4.0	2.9–5.1	1.1	0.6–1.7
35–49	1063	9.2	7.4–11.0	11.4	9.2–13.6	4.7	3.3–6.1	6.0	4.4–7.6	2.5	1.4–3.6
50–64	581	27.7	23.5–31.8	15.9	12.8–19.1	8.4	6.1–10.7	7.2	5.1–9.2	5.5	3.6–7.4
65+	304	43.8	37.6–50.0	18.6	13.5–23.7	13.8	9.4–18.3	9.0	5.3–12.7	5.7	2.8–8.6
Gender	3342										
Male	1349	13.3	11.4–15.2	9.0	7.1–11.0	3.8	2.5–5.0	5.4	4.0–6.7	2.7	1.8–3.5
Female	1993	13.2	11.5–15.0	12.4	10.4–14.4	5.9	4.6–7.2	5.9	4.6–7.1	2.8	2.0–3.6
Marital Status	3342										
Single	668	4.4	2.4–6.3	6.6	4.8–8.5	16.4	0.6–2.7	4.3	2.8–5.9	1.3	0.5–2.3
Married	2415	13.0	11.5–14.6	10.9	9.4–12.5	5.0	4.1–6.0	5.5	4.5–6.6	2.8	2.0–3.5
Divorced	28	†	†	†	†	†	†	†	†	†	†
Widowed	222	40.6	33.6–47.5	23.5	16.9–30.1	15.3	9.9–20.6	9.7	5.4–14.0	7.0	3.7–10.4
Separated	9	†	†	†	†	†	†	†	†	†	†
Education	3342										
Illiterate	498	35.4	30.9–39.9	19.3	15.1–23.4	11.5	8.4–14.6	7.8	5.4–14.0	4.8	2.7–6.8
Primary	934	17.3	14.8–19.7	12.8	10.3–15.3	6.9	5.1–8.6	7.2	5.2–9.2	4.6	3.2–6.0
Secondary/ Technical§	1476	6.1	4.8–7.3	9.0	7.5–10.5	2.9	2.0–3.8	4.6	3.6–5.7	1.3	0.8–1.9
University	434	4.0	2.2–5.7	5.1	3.2–7.0	1.4	0.2–2.5	3.5	1.8–5.2	1.2	0.2–2.3
Income	3054										
<100JD¶	540	26.3	22.4–30.1	17.2	13.6–20.8	8.8	6.1–11.5	7.9	5.1–10.7	4.5	2.5–6.6
100–299JD	1979	12.2	10.6–13.8	10.2	8.5–11.8	4.5	3.4–5.6	5.2	4.1–6.3	2.6	1.8–3.5
300–499JD	334	6.7	3.9–9.4	9.3	6.2–12.5	3.4	1.3–5.5	5.3	2.9–7.6	0.9	0.0–1.9
≥500	201	3.6	1.0–6.3	6.7	3.0–10.4	3.2	0.9–5.5	3.2	0.7–5.7	1.6	0.0–3.4

*Unweighted sample size
** 95% Confidence Interval
† Sample <50
§ Attended or Graduated
¶ One Jordanian Dinar (JD) = 1.4 U.S. Dollars

interviewers. All field teams included a female interviewer and a local health official to facilitate communication.

Field work was conducted between October 1st and December 13th , 2004. Weights were computed to account for the probability of selection and post-stratification to the general population. STATA 8 software[3] was used in the analyses and to account for the complex sampling design.

The questionnaire included questions on demographics, HRQOL, health care access, hypertension awareness, cholesterol awareness, diabetes, asthma, heart diseases, tobacco use, physical activity, nutrition, weight, height, oral health, eye sight, women's health, medical services, and screening. Income was reported in Jordanian Dinars (JD); each JD is equivalent to 1.4 U.S. dollars.

The four HRQOL questions, initially developed by the U.S. CDC [4] include the following:

1) "Would you say that in general your health is excellent, very good, good, fair, or poor?";
2) "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?";
3) "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"; and
4) "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, school, or recreation?" Overall unhealthy days were calculated, which is the sum of each respondent's physically or mentally unhealthy days, with a maximum of 30 unhealthy days. In the analysis a 14-day cutoff value was used to categorize mentally unhealthy days because this criterion is often used as a marker for clinical depression and anxiety disorders.[5,6] Physically unhealthy days and activity limitation days were also divided at 14 days to be consistent with the cutoff value used for mentally unhealthy days and consistent with previous studies.[2,7,13]

Self-reported weight and height were used to calculate body mass index (BMI) as weight (kg)/height (m^2). Participants were classified as obese if their BMI was ≥30. Self-reported weight and height were assessed by asking, "About how much do you weigh?" and "About how tall are you?" Vigorous physical activity was assessed by asking, "On average, how many days a week do you get at least 20 minutes of vigorous physical activity?" Moderate physical activity was assessed by asking, "On an average, how many days a week do you get at least 30 minutes of moderate physical activity?" Physically inactive was defined as not having any vigorous or moderate activity in a week. High blood pressure was assessed by ask-

Table 2. Health Related Quality Of Life Measures by Selected Chronic Conditions and Risk Factors – Jordan, 2004.

	n*	Fair or Poor (%)	C.I.** (%)	≥14 Overall Unhealthy Days (%)	C.I. (%)	≥14 Physically Unhealthy Days (%)	C.I. (%)	≥14 Mentally Unhealthy Days (%)	C.I. (%)	≥14 Activity Limitation Days (%)	C.I. (%)
Total	3342	13.3	12.0–14.5	11.0	9.8–12.3	5.0	4.2–5.9	5.7	4.7–6.6	2.7	2.1–3.3
Current Smoking†	3342	15.1	12.4–17.7	14.0	11.3–16.6	6.6	4.8–8.5	8.4	6.4–10.3	4.7	3.1–6.4
Obese§	2853	16.2	13.1–19.3	14.9	11.7–18.1	8.2	5.6–10.7	6.7	4.5–8.9	4.6	2.8–6.3
Physical Inactivity¶	3302	17.5	15.2–19.8	9.6	8.0–11.1	5.5	4.4–6.7	4.4	3.4–5.4	3.0	2.2–3.9
Asthma	3340	33.4	26.2–40.6	26.9	19.9–33.8	18.4	12.2–24.6	12.6	7.2–18.1	12.8	7.3–18.4
Hypertension	3310	36.8	32.5–41.0	20.6	16.3–24.9	12.6	9.3–16.0	10.0	7.4–12.7	7.8	5.1–10.5
High Blood Cholesterol	3214	36.5	30.0–43.1	21.6	14.5–27.7	11.3	6.6–16.0	10.4	5.5–15.4	8.3	4.4–12.3
Diabetes	3321	47.4	40.7–54.0	23.7	16.8–30.7	14.1	8.8–19.5	10.3	6.4–14.1	10.0	5.7–14.3

*Unweighted sample size
**95% Confidence Interval
† Ever smoked >100 cigarettes in a lifetime and currently smoke every day or some days.
§ Body Mass Index (kilograms/meter^2) (BMI) = ≥30
¶ No vigorous activity (i.e., resulting in heavy sweating and large increases in breathing or heart rate) or moderate activity (i.e., resulting in light sweating and small increases in breathing or heart rate).

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	n**	Unadjusted odds ratio (OR), [95% CI]	Age and sex adjusted odds ratio (AOR), [95% CI]	Multivariate adjusted odds ratio (AOR) †, [95% CI]
Current smoking‡	3342	1.2 [1.0–1.6]	1.6 [1.2–2.2]	1.5 [1.0–2.1]
Obese§	2853	1.7 [1.3–2.2]	1.1 [0.8–1.6]	0.7 [0.5–1.1]
Physical Inactivity¶	3302	2.2 [1.7–2.7]	1.3 [1.0–1.6]	1.2 [0.9–1.7]
Asthma	3340	3.6 [2.6–5.2]	2.9 [1.9–4.4]	3.4 [2.0–5.7]
Hypertension	3310	5.8 [4.6–7.4]	2.5 [1.9–3.4]	2.2 [1.5–3.2]
High Blood Cholesterol	3,214	4.6 [3.4–6.2]	2.3 [1.6–3.2]	2.0 [1.2–3.2]
Diabetes	3,321	7.7 [5.7–10.3]	3.4 [2.4–4.8]	3.3 [2.2–5.1]

Table 3. The Odds of Fair or Poor Health* by Selected Chronic Conditions and Risk Factors.

*Respondents self-rated health as excellent, very good, good, fair, or poor. Those who reported excellent, very good , or good served as the reference group.
**Unweighted sample size
† Multivariate includes adjusting for age, sex, marital status, education, income and all other variables in table 3
‡ Ever smoked >100 cigarettes in a lifetime and currently smoke every day or some days.
§ Body Mass Index (kilograms/meter^2) (BMI) = ≥30
¶ No vigorous activity (i.e., resulting in heavy sweating and large increases in breathing or heart rate) or moderate activity (i.e., resulting in light sweating and small increases in breathing or heart rate).

ing, "Have you ever been told by a health professional that you have high blood pressure?" High cholesterol was assessed by asking, "Have you ever been told by a health professional that your blood cholesterol is high?" Diagnosed diabetes was assessed by asking, "Have you ever been told by a health professional that you have diabetes?" Gestational diabetes was excluded. The type of diabetes was not assessed. Asthma was assessed by asking, "Have you ever been told by a health professional that you had asthma?"

Results

Overall, 3342 adults were interviewed (response rate 95 %). A total of 13 % of respondents reported fair or poor health and 11 % reported ≥14 overall unhealthy days (Table 1). Older adults (aged 65 and over) reported the highest percentage of fair or poor health (44 %), whereas only 3.5 % of young adults (age 18–34) reported fair or poor health. Adults aged ≥65 also reported the highest percentage of ≥14 overall unhealthy days (19 %), physically unhealthy days (14 %), mentally unhealthy days (9.0 %) and activity limitation days (5.7 %). Compared to men (9.0 %), females reported a higher percentage of ≥14 overall unhealthy days (12 %). A higher percentage of widowed (41 %) persons reported fair or poor health compared to married (13 %) or single (4.4 %) persons. Persons who were illiterate (35 %) or with only primary education (17 %) reported a higher percentage of fair and poor health than those with secondary or technical (6.1 %) or university (4.0 %) education. The same patterns of response were observed among educational subgroups reporting ≥14 overall unhealthy days, physically unhealthy days, mentally unhealthy days and activity limitation days. Persons with monthly income less than 100 Jordanian Dinars reported the highest percentage for fair and poor health (26 %), ≥14 overall unhealthy days (17 %), physically unhealthy days (8.8 %), mentally unhealthy days (7.9 %) and activity limitation days (4.5 %) compared to other income groups.

Persons with asthma (33 %), hypertension (37 %), high blood cholesterol (37 %), and diabetes (47 %) reported a higher percentage of fair and poor health than the total number of respondents (13 %) (Table 2). Persons with asthma also reported the highest percentage of ≥14 overall unhealthy days (27 %), physically unhealthy days (18 %), mentally unhealthy days (13 %) and activity limitation days (13 %) compared to other reported conditions.

In the multivariate logistic regression model, asthma [OR 3.4, 95 %CI 2.0–5.7], hypertension [OR 2.2, 95 %CI 1.5–3.2], high blood cholesterol [OR 2.0, 95 %CI 1.2–3.2], and diabetes [OR 3.3, 95 %CI 2.2–5.1] were all independently associated with fair or poor health after controlling for other relevant factors (Table 3).

Discussion

This is the first report from a large nationally representative study in the Arab world that assesses HRQOL measures. Our findings indicate that demographic and socioeconomic characteristics or the presence of a chronic condition or risk factor are important determinants of mental and physical health in Jordan. These measures take into account the relationship between chronic disease and health related quality of life and can be used to guide planning, interventions or evaluation, public health prevention and promotion programs.

CDC HRQOL-4 indicators, or healthy days measures, have demonstrated reliability and validity for population based surveillance [8–10] and have been used in the US since 1993 in the behavioral risk factor surveillance system (BRFSS).[1,11] These measures provide policy makers with a simple tool to identify disparities, monitor the health of populations, and evaluate programs that have diverse health and social implications.

Since Jordan used the US healthy days HRQOL-4 measures, a comparison to the U.S. BRFSS results is possible. A substantially higher percentage of older adults (≥65) in Jordan had reported fair or poor health (44 %) than adults aged 65 and over (28 %) in the US in 2005.[12] Patterns among socioeconomic subgroups were similar between Jordan and the U.S. 2005 BRFSS; persons with less education or lower income reported a higher percentage of fair or poor health. Jordanians with asthma reported poorer healthy days measures compared to adults in Rhode Island in 2002, with 25 % of Rhode Islanders reporting fair or poor health status, 23 % ≥14 physically unhealthy days, 16 % mentally unhealthy days and 13 % activity limitation days.[13] Reported differences by age and health conditions may reflect variation in health care services or cultural differences in assessment of quality of life.

The high response rate (95 %) in this survey reflects the hospitality of Jordanian culture and the skill of trained interviewers.

The findings in this report are subject to at least three limitations. The survey was cross-sectional and therefore prevents determination of the temporal sequence or causality of associations. All of the variables were self-reported which may have introduced bias. Finally, there have not been validity or reliability studies of the healthy days measures in Jordan or an Arabic speaking country. Studies to develop better measures for mental health in the region are needed.

Historically, Jordanians have strong family bonds and a wide social network of support. Mental health services, such as counseling, are not widely available or easily accepted. With globalization and the influence of western culture the extended family's role is diminishing. The high rates of mental distress in our study may be an indicator of a shift in health needs in Jordan and the area. These simple HRQOL questions could be used by medical health professionals as screening tools for health at every medical contact.

Our findings call for establishing programs to directly address quality of life and mental health in Jordan and other Arab countries in the region, since they will face similar issues. These programs should be widely available and advertised for those who need it. Indeed, it is time to promote well being for the mind and the body at the same time.

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