

# Psychometric validation of a Saudi Arabian version of the sf-36v2 health survey and norm data for Saudi Arabia

Mohamad Al-Tannir, Ahmad AboAbat, Hazem Qannam, Jakob Bue Bjorner

## Background

Patients' self-reports of health outcomes are important for measuring the impact of chronic disease, accounting for changes in health, measuring the effects of treatment, and predicting health resource utilization and thus medical expenditures. To date, most of the available patient reported outcome (PRO) measures are in English, and few have been translated into Arabic and adapted for use in Arab countries

## Objectives

This study aimed to evaluate the basic psychometric properties of the new Saudi Arabian SF-36v2 and establish norm data for Saudi Arabia.

## Methods

Translation and adaptation of the SF-36v2 used standard methodology. Psychometric validation included two stages: 1) A qualitative study (n = 100) explored the components of health and health-related quality of life considered important in Saudi Arabia and evaluated the content validity of the SF-36v2 in Saudi Arabia, and 2) A quantitative study (n = 6166) evaluated the basic psychometric properties of the Saudi SF-36v2 and established norm data for Saudi Arabia. Comparison with US general population data (n = 4040) evaluated differential item function (DIF) and cross-national differences.

## Results

The qualitative study supported the content validity of the Saudi SF-36v2. Cognitive debriefing identified only few and minor problems. Psychometric analyses supported item convergence within scales and differentiation across scales of the SF-36v2. Scale level exploratory factor analyses did not support the typical distinction between physical health and mental health components. Internal consistency reliability was satisfactory for all scales except the social function scale (alpha = 0.67). Cross-national DIF was identified for 9 items. In the Saudi general population, the average vitality score was lower for women (- 2.71 points) compared to men. For men, older age groups scored lower on the physical function scale (- 3.31) and the physical health component (- 3.06). For women, older age groups scored lower on the role physical (- 3.72), bodily pain (- 3.66), and vitality (- 2.32) scales as well as the physical health component (- 3.52). Compared to the 2009 United States general population, and after adjusting for age, gender, and differential item function, persons in Saudi Arabia had lower average scores for the physical function (- 3.10), role physical (- 4.75), social function (- 4.23), role emotional (- 5.67), and mental health (- 4.82) scales, as well as the mental health component (- 4.57).

## Conclusion

This Saudi normative study of patient reported outcomes supported the validity and reliability of the new Saudi SF-36v2 and found cross-national differences with the USA.

Table 9 SF-36v2 Norm Tables for Saudi Arabia – Total Sample

	PF	RP	BP	GH	VT	SF	RE	MH	PCS	MCS
All										
Mean	48.73	46.42	50.09	50.58	49.79	46.18	43.18	47.27	50.32	45.36
Std Dev	10.13	9.10	9.33	8.51	9.20	8.90	11.21	10.15	8.12	9.69
Minimum	19.26	21.23	21.68	18.95	22.89	17.23	14.39	11.63	16.40	7.74
25th Pctl	44.15	39.19	42.64	46.05	43.69	42.30	35.28	40.40	44.82	39.17
50th Pctl	51.80	48.17	51.51	50.81	49.63	47.31	45.72	48.25	51.55	46.25
75th Pctl	57.54	54.91	55.55	56.99	55.57	52.33	56.17	56.10	56.72	52.47
Maximum	57.54	57.16	62.00	66.50	70.42	57.34	56.17	63.95	72.45	73.18
N	6164	6148	6150	6166	6149	6163	6135	6150	6136	6137
N Miss	2	18	16	0	17	3	31	16	30	29
6-USA unadj	-1.27 (-1.67/ -0.87)	-3.58 (-3.96/ -3.20)	0.09 (-0.29/ 0.47)	0.58 (0.22/ 0.94)	-0.21 (-0.59/ 0.16)	-3.82 (-4.20/ -3.45)	-6.82 (-7.25/ -6.40)	-2.73 (-3.14/ -2.33)	0.31 (0.04/ 0.66)	-4.65 (-5.04/ -4.26)
6-USA adj	-2.70 (-3.11/ -2.28)	<b>-4.75</b> (-5.15/ -4.36)	<b>-0.96</b> (-1.36/ -0.56)	0.04 (0.35/ 0.43)	<b>-0.25</b> (-0.65/ 0.15)	<b>-4.23</b> (-4.63/ -3.84)	-7.15 (-7.60/ -6.69)	-2.44 (-2.87/ -2.01)	-1.19 (-1.55/ -0.82)	-4.18 (-4.59/ -3.76)
6-USA DIF adj	<b>-3.10</b> (-3.51/ -2.70)			<b>-1.83</b> (-2.20/ -1.47)		<b>-5.67</b> (-6.10/ -5.23)	<b>-4.82</b> (-5.25/ -4.38)	<b>-1.58</b> (-1.94/ -1.22)		<b>-4.57</b> (-4.98/ -4.16)

Figures in **BOLD** indicate our best assessment of crossnational differences  
 6-USA unadj: Difference between Saudi and US SF-36v2 scores without adjustment  
 6-USA adj: Difference between Saudi and US SF-36v2 scores with adjustment for differences in age and gender  
 6-USA DIF adj: Difference between Saudi and US SF-36v2 scores with adjustment for differential item function and differences in age and gender  
 95% CI 95% Confidence Interval, PF Physical function, RP Role Physical, BP Bodily Pain, GH General Health, VT Vitality, SF Social Function, RE Role Emotional, MH Mental Health