

# Reliability and Validity of Persian Version of World Health Organization Health and Work Performance Questionnaire in Iranian Health Care Workers

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## Abstract

**Background:** The effect of health status on productivity has widely been studied and discussed in literature. Valid and reliable tools are needed to evaluate the levels of health and productivity and provide detailed information, before any intervention is implemented. World Health Organization Health and Work Performance Questionnaire (HPQ) is a widely used instrument in estimating the workplace costs of health problems in terms of reduced job performance, sickness absence, and work-related accidents and injuries.

**Objective:** To assess the reliability and validity of Persian version of HPQ in Iranian health care workers.

**Methods:** The questionnaire was translated to Persian and back translated. 102 health care workers completed the questionnaire. Absence and sick-leave data was extracted from administrative records.

**Results:** Factor analysis revealed acceptable validity for the questionnaire in part A (health). Cronbach's alpha was  $>0.73$  for all scales of Parts B (work) and C (demographic). Questions targeting days of absence and sick-leave had acceptable correlation with administrative records (Pearson's  $r >0.75$ ), while questions on total hours worked showed lower correlation.

**Conclusion:** Persian version of HPQ can be considered a reliable and valid tool in Iranian health workers.

**Keywords:** Reproducibility of Results; Occupational health; Iran; Efficiency, organizational

## Introduction

A healthy workplace, as described by Sauter, Lim and Murphy,<sup>1</sup> is any organization that “maximizes the integration of workers goals for well-

being and company objectives for profitability and productivity.” The two most important critical components embedded in this definition are the performance of the organization and the health of the employees.<sup>2</sup> The dual focus associated with

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**TAKE-HOME MESSAGE**

- Poor mental and physical health conditions are associated with productivity losses, and impose heavy burden.
- Developing reliable and valid tools for situation assessment is an important step in workplace improvement programs.
- WHO Health and Work Performance Questionnaire (HPQ) is a widely used instrument in estimating the workplace costs of health problems in terms of reduced job performance, sickness-absence, and work-related accidents-injuries.
- Persian version of HPQ has acceptable reliability and validity in health care works.

the definition of a healthy workplace represents a shift in the conceptualization of what constitutes health within an organization.<sup>3</sup>

The need for dual consideration of the individual as well as the organization is epitomized by Browns argument that human resource practices “are only progressive if the concern for organizational level outcomes is matched by a concern for the well-being of employees who are directly affected by these practices.”<sup>3,4</sup>

Based on a review in 2006, Grawitch<sup>3</sup> argued that to define a healthy workplace, we need two assumptions:<sup>5</sup> Firstly, we presume that based on a set of job and organizational variables, we can identify the key characteristics of a healthy workplace; secondly, we assume that having a healthy workplace results in a more productive healthier workforce, and hence, increased productivity and a competitive advantage for the organization.<sup>3</sup>

The relationship between improve-

ments in health and increases in productivity continues to inspire interest.<sup>6</sup> Increased investments by health care employers constitute a significant opportunity for improving both worker performance and firm profitability.

The effect of health status on productivity has widely been studied and discussed in literature.<sup>7</sup> Poor mental and physical health conditions are associated with loss of productivity,<sup>8,9</sup> and heavy economical burden.<sup>10</sup> Many studies have demonstrated the effect of various health conditions on productivity. Chronic health conditions,<sup>11</sup> migraine headaches,<sup>12,13</sup> irritable bowel syndrome,<sup>14,15</sup> allergic rhinitis,<sup>16</sup> mental health problems,<sup>17,18</sup> and metabolic syndrome<sup>19</sup> are among these conditions. Integrating productivity data with health data can help employers develop effective workplace health investment strategies.<sup>20</sup>

Valid and reliable tools are needed to evaluate the levels of health and productivity and provide detailed information, before any intervention is implemented. Among many instruments designed for this purpose, World Health Organization (WHO) Health and Work Performance Questionnaire (HPQ) has been widely used all over the world. HPQ is a self-report instrument developed to assess the workplace costs of health problems in terms of reduced job performance, sickness absence, and work-related accidents-injuries. The HPQ was initially developed as an expansion of the WHO Disability Assessment Schedule (WHO-DAS), a self-report measure for assessing day-to-day functioning in studies aimed at reducing the role impairments associated with untreated or under-treated health problems. The collected information can finally be used to rationalize the allocation of health care resources and provide targeted investment in employee health care.<sup>21</sup> The HPQ has been created to provide the employer with some critical (but usually un-

available) information about the quality of health care services and the effects of investments in employee health care. It uses three generally used methods of assessing workplace productivity: absenteeism, work performance, and job-related accidents.

In this study, we intended to assess the reliability and validity of the Persian version of HPQ in Iranian health care workers.

## Materials and Methods

### Questionnaire

With permission from the HPQ center, we translated 91 questions of the Web-Survey employee version-2005<sup>22</sup> into Persian. Two independent translators back-translated it into English. The questionnaire consists of parts A (health), B (work) and C (demographic). Part A of the questionnaire consists of 57 questions, evaluating self-rated health and self-rated mental health, physical health status (25 items), mental health (5 items), recent physical health status (11 items), recent mental health status (6 items) and history of medical visits in past year (7 items). Part B assesses work hours, sick-leaves, occupational accidents and self-rated productivity in past seven days and past four weeks (23 items). Part C has eight demographic questions.

### Participants

All employees of a local health care facility in Tehran, Iran were invited to participate in a Web-based survey. After two weeks, 102 (69.4%) of 147 employees completed the questionnaire. Data on work hours and other administrative information needed were collected with permission of the research board of the institute.

### Statistical Analysis

Structural validity was evaluated by factor analysis. Principal component analysis was performed. Many of the questions in this questionnaire had a specific time span that made test-retest techniques practically impossible to use. To assess the reliability of the scales of the questionnaire, we calculated Cronbach's alpha coefficient for scales available. It was also calculated and compared in gender subgroups. Pearson's correlation coefficient ( $r$ ) was calculated for evaluating the association of reported absenteeism and administrative records.

Statistical analysis was performed using SPSS® ver 16 and Stata® ver 10 software programs.

## Results

After two weeks of invitation to participate in the study, 102 (69.4%) of 147 employees completed the Web-based questionnaire. Participants included 30 men and 72 women. They had a mean age of 35.8 (35.7 for women, 36.1 for men; range: 25–53) years. Of studied participants, 22.5% were single, 70.6% married, 3.9% divorced and 2% widowed. Almost half (52%) of participants had between 13 and 16 years of education; 33.3% had 17 years or more, and 14.7% had 12 years or less education.

To assess the construct validity of the questionnaire, we performed factor analysis. Bartlett's test for sphericity was statistically significant ( $p < 0.001$ ) for part A, indicating the possibility of performing factor analysis. Principal component analysis was performed without rotation and revealed 11 empirical scales, out of which, four components corresponded to four questionnaire themes. Scale 1 represented physical health scale of the questionnaire with 25 items. Other scales corresponded to the mental health scale, recent physical health status and recent

**Table 1:** Cronbach's alpha coefficient of main scales

Question	Number of Items	Coefficient	Coefficient in male subgroup	Coefficient in female subgroup
Physical health	25	0.74	0.67	0.79
Mental health	5	0.73	0.74	0.75
Recent physical signs and symptoms	11	0.73	0.74	0.74
Recent mental signs and symptoms	6	0.75	0.76	0.79
Performance	7	0.76	0.90	0.61

mental status. History of medical visits did not match any of the empirical scales. These steps were repeated in gender subgroups. Factor analysis was not possible (Bartlett's test was not statistically significant) for the other two sections (work and demographic).

In the next step, internal consistency of the questionnaire was determined by calculating Cronbach's alpha coefficient. For section A (health), we categorized the questions in the questionnaire according to the components derived by factor analysis and calculated the Cronbach's alpha for these scales. Cronbach's alpha coefficient was also calculated for recent performance scale in section B. The analysis was repeated in gender subgroups. The results are shown in Table 1. Pearson's r was calculated for evaluating the association of reported absenteeism and admin-

istrative records. The results are shown in Table 2. Validation was not evaluated for questions about work accident injuries due to rarity in our sample (only 1 case).

### Discussion

Overall, the results of the factor analysis corresponds closely with theoretical constructs of the questionnaire and show that the Persian version of HPQ has acceptable construct validity, similar to original questionnaire in part A of the questionnaire (health). Part B (work) and part C (demographic) of the questionnaire consist of miscellaneous questions making them inappropriate for factor analysis. Cronbach's alpha coefficients for the five scales are higher than 0.73, reflecting an acceptable internal consistency. For questions targeting absence and sick-leave, questions asking about number of days showed a high correlation with administrative records (Pearson's  $r > 0.75$ ), while questions on total hours worked had moderate correlation. It seems that participants had problem calculating total hours worked in both past seven days and past four weeks. Providing the respondents with a better explanation may improve the questionnaires ability to evaluate real hours worked.

The questionnaire was reliable and

**Table 2:** Correlation of self-reported work hours and administrative documents

Question	Pearson's r
7-day work hours	0.65
Full day sick-leaves	0.9
Other absences	0.76
Part of a day absence	0.92
Total hours worked in 28 days	0.58

valid in health systems. However, we do not comment on the applicability of the results to other work settings. The findings of this study show that Persian version of HPQ can be considered a reliable and valid tool in health care workers and can be used for research and administrative purposes.

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**Conflicts of Interest:** None declared.

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