

Original Article

# International Hospital Performance Assessment: Developing a Questionnaire

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## Abstract

**Background:** As there is no valid questionnaire for assessing international hospital performance from providers' perspective, this study aimed to develop a reliable as well as valid questionnaire for Iranian hospitals.

**Materials and Methods:** To develop the International Hospital Performance Assessment (IHPA) questionnaire, literature review did and comparative study conducted for extracting relevant items from twenty leader hospitals in all over the world. After that, to design the questionnaire and estimate its content validity index and ratio (CVI, CVR), 20 medical tourism experts selected. Then, questionnaire's construct validity (CVI & CVR) determined by using SPSS version 21 as well as exploratory factor analysis. Finally, reliability assessed by calculating Cronbach's alpha coefficient.

**Results:** The content validity of the questionnaire determined as (CVI= 0.85, CVR= 0.60). According to expert opinion 5 dimensions of the questionnaire selected from World Health Organization hospital performance framework, which were clinical effectiveness and patient safety, efficiency, patient centeredness, governance responsiveness and even staff orientation. Furthermore, results of exploratory factor analysis showed that the questionnaire contained 45 items and Cronbach's alpha coefficient was 0.687.

**Conclusion:** Results indicated that standard IHPA questionnaire with 45 items in 5 dimensions developed as a tool for measuring hospitals' quality of care in Iran.

**Keywords:** Hospitals, questionnaire, medical tourism

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## Introduction

Medical tourism defines as planned travel to outside hometown boundaries to receive healthcare services for improving or restoring health status<sup>1</sup>. Medical tourism market is growing rapidly in the world and has been an affiliation with well-known healthcare delivery as well as medical centers<sup>2,3</sup>. Indeed, healthcare provider organizations main concern is

standardized processes for indicating better patient outcomes, safety and even quality of care<sup>4</sup>. Today, improving quality of hospital care is a key strategy for attracting international patients<sup>5</sup>. Some popular entity such as Medical Travel Quality Alliance (MTQUA) is responsible for assessing healthcare delivery systems globally<sup>6</sup>. Iranian Ministry of Health and Medical Education (MOHME) is forcing by healthcare provisions for implementing International Patient

Department (IPD) requirements to certify for attracting medical tourists due to 2050 vision document to absorb annually 20 million foreign travelers and 40 million domestic ones<sup>7,8</sup>. Medical tourism industry is increasing around the world and the recognize hospitals increase drastically, it does not mean that quality of hospitals' care reliable without negative events<sup>3</sup>. However, strengthening monitoring and evaluation performance should be focused on hospitals because they spend more half of health system budget<sup>9</sup>. Despite of some previous investigations regarding hospital performance assessment such as Velliard *et al*, (2005)<sup>10</sup>, Queensland (2015)<sup>11</sup>, MTQUA (2016)<sup>6</sup> and others concentrated on service quality assessment by using SERVQUAL model like as Lim and Tag<sup>12</sup>, Toker and Adams<sup>13</sup>, Jabnoun and Chaker<sup>14</sup>, Sohail<sup>15</sup>, Boshoff and Gray<sup>16</sup> and Qolipour *et al*,<sup>17</sup> studies there was no standard questionnaire on international hospital performance assessment. Thus, this study aimed to develop a valid and reliable questionnaire from providers' perspective to assess international hospital performance.

## Methods

To develop the international hospital performance assessment (IHPA) questionnaire, literature review was done firstly to search tools and assessment performance models for hospitals through popular search engines such as Springer, PubMed, Scopus, Emerald and Google Scholar. Among all frameworks as well as hospital performance assessment models which were explored, one comprehensive and also flexible framework derived from World health Organization (WHO) known as Performance Assessment Tool for Hospitals (PATH)<sup>10</sup> chose as the basic criteria for developing the questionnaire. Then, comparative study conducted for extracting relevant items from twenty leader hospitals in all over the world. In this phase, through the website of popular international hospitals from worldwide five continents the indicators gathered. Meanwhile, 20 Iranian hospitals, which achieved IPD from MOHME, selected and their website indicators extracted.

After that, the validity of a research-made questionnaire estimated into two divisions 'face and

content' by 20 experts and also scholars who were assessors of hospitals or studied or investigated on health service management worked in MOHME, Medical universities or even international hospitals. Furthermore, for assessing face validity of the questionnaire five experts' ideas consensuses.

The Content Validity Index (CVI) calculated in terms of three dimensions simplicity, relevance and clarity. In fact, each dimension measured by four-scale LIKERT from completely to nonsense. Besides that, Content Validity Ratio (CVR) obtained by using three-scale LIKERT as critical, useful but not critical and not critical. The formula for computing the CVI and CVR were as below respectively:  $CVI = \text{Counting individuals scoring 3 or 4} / \text{total number of respondents or experts answering that question}$  and  $CVR = \text{Counting individuals scoring 3 to the critical option} / \text{total number of respondents or experts answering that question}$ .

Moreover, the 20 experts confirmed the reliability of the questionnaire by test retest method and calculating Spearman correlation as well as Cranach's alpha coefficient. All the analytical techniques implemented by SPSS software version 21. Finally, when questionnaire's construct validity (CVI and CVR) determined, for confirming the relation between each dimension and subdivision then its indicator(s) the Exploratory Factor Analysis (EFA) was used.

## Results

**Development a questionnaire:** For developing first draft of the questionnaire, 116 items were gathered via the international hospitals in five dimensions according to expert consensus by using Velliard *et al*, (2005)<sup>10</sup> framework for hospital performance which were clinical effectiveness and patient safety, efficiency, patient centeredness, governance responsive and even staff orientation. After wards, five-scale Likert applied to every question for indicating exactly the answer of respondents from totally agree, agree, agree somewhat, disagree and totally disagree. Then, the number of questions reduced due to integrated similar items or deleted repeated ones.

**Content validity:** After analyzing, the respond of 20 medical tourism professionals' 45 items remained. Therefore, the questionnaire developed with 45

**Table 1:** Final questionnaire with content validity rate of the questions

no	Item	CVI			CVR	Result
		Simple	Relevant	Clarity		
1	Hand hygiene score for clinical effectiveness and patient safety	0.90	1	0.90	1	Accepted
2	Medical errors and medication safety for clinical effectiveness and patient safety	0.90	1	0.70	1	Accepted
3	Site of surgery infection rate for clinical effectiveness and patient safety	0.90	1	1	1	Accepted
4	Injuries before surgery	0.70	0.60	0.50	0.20	Rejected
5	The pressure ulcer rate for clinical effectiveness and patient safety	0.90	1	0.90	0.90	Accepted
6	Thromboembolism rate for clinical effectiveness and patient safety	0.88	0.88	0.70	0.79	Accepted
7	Time of care	0.40	0.60	0.50	0.60	Rejected
8	Number of critical care audit for clinical effectiveness and patient safety	0.60	0.90	0.70	0.88	Accepted
9	SBARR score for clinical effectiveness and patient safety	0.60	0.88	0.70	0.88	Accepted
10	Accessibility, Availability, Reliability for clinical effectiveness and patient safety	0.56	0.86	0.69	0.66	Accepted
11	Performance of hospital operations	0.50	0.88	0.60	0.20	Rejected
12	Hospital functions in quality and patient safety	0.70	0.88	0.70	0.23	Rejected
13	Achievement to national patient safety and clinical governance goals for clinical effectiveness and patient safety	0.90	1	0.88	0.90	Accepted
14	The geographical place of the hospital	0.70	0.50	0.88	0.40	Rejected
15	The utilization of medical technology for clinical effectiveness and patient safety	0.80	.80	0.90	0.70	Accepted
16	The medical errors reporting system for clinical effectiveness and patient safety	0.80	0.77	0.80	0.70	Accepted
17	The number of patient accident eg. patient fall for clinical effectiveness and patient safety	0.80	.80	0.90	0.60	Accepted
18	Measure the harmful factors of the work environment	0.80	0.77	0.80	0.36	Rejected
19	The surgical death rate for clinical effectiveness and patient safety	0.90	0.80	1	0.70	Accepted
20	Relative defect rate for clinical effectiveness and patient safety	0.90	0.80	1	0.80	Accepted
no	Item	CVI			CVR	Result
		Simple	Relevant	Clarity		
21	the improvement rate for clinical effectiveness and patient safety	0.90	0.80	1	0.80	Accepted
22	The various number of clinics and hospital wards for efficiency	0.70	0.88	0.70	0.60	Accepted
23	The average length of stay and bed occupancy for efficiency	0.90	1	0.90	0.70	Accepted
24	The patient waiting time for receiving services such as medical consultation for efficiency	0.90	1	0.70	0.60	Accepted
25	The number of inpatient, outpatient, total number of hospital clients and number of patients in waiting list for efficiency	0.90	1	1	0.50	Accepted

26	Number of patients admitted by each physician for efficiency	0.60	0.88	0.70	0.50	Accepted
27	The hospital / ward income with hospital / ward expenditure for efficiency	0.56	0.86	0.69	0.77	Accepted
28	The appropriate price for services for efficiency	0.70	0.80	0.60	0.80	Accepted
29	The patient satisfaction for patient centeredness	0.80	0.90	1	0.88	Accepted
30	The number of hospital contract with international insurance company for patient centeredness	0.80	0.80	1	0.74	Accepted
31	The number of hospital contract with flight agency (internal or external lines) for patient centeredness	0.80	0.60	1	0.60	Accepted
32	The admission facilities or accommodation for patient centeredness	0.80	0.80	1	0.75	Accepted
33	The availability of hospital catalogue , hospital performance report, international rights and hospital responsibility against international patients for patient centeredness	0.86	0.76	0.95	0.77	Accepted
34	The Certification of Quality Verification eg international accreditation for governance responsiveness	0.87	0.87	1	0.88	Accepted
35	The hospital national accreditation or radiology / laboratory accreditation or national referral laboratory for governance responsiveness	0.88	0.62	0.88	0.77	Accepted
36	The certification for ISO 9001,14001,... for governance responsiveness	0.88	0.87	0.94	0.74	Accepted
37	The certification for hospital services competency with clinical guidelines for governance responsiveness	0.80	0.90	0.70	0.70	Accepted
38	The certification for 4-5 star hospital for governance responsiveness	0.90	0.88	0.60	0.70	Accepted
39	The certification for Medical Tourism Quality Alliance for governance responsiveness	0.60	0.80	0.80	0.80	Accepted
40	The hospital membership in national and Asian quality association, cancer and Parkinson association for governance responsiveness	0.80	0.60	0.80	0.50	Accepted
41	Hospital nominated as wellness hospital for governance responsiveness	0.60	0.80	0.80	0.70	Accepted
42	Other certificates such as HALAL for food and drinks, national approval for tourism food hygiene as well as GMP for governance responsiveness	0.62	0.72	0.72	0.60	Accepted
43	Receiving International Patient Department (IPD) by hospital for governance responsiveness	0.70	0.90	0.90	0.90	Accepted
44	Receiving Clinical Quality Certificate (CQC) for governance responsiveness	0.70	0.80	0.80	0.70	Accepted
45	The staff satisfaction rate for staff orientation	0.70	0.70	0.80	0.70	Accepted
46	The multilingual hospital staff for staff orientation	0.80	0.80	0.80	0.70	Accepted
47	The number of specialist of hospital for staff orientation	0.90	0.80	0.70	0.70	Accepted
48	The number of various specialist of hospital for staff orientation	0.80	0.90	0.90	0.70	Accepted
49	The popularity of hospital physician specialist of hospital for staff orientation	0.80	0.80	0.80	0.80	Accepted
50	The number of staff trained in medical tourism and experienced staff for staff orientation	0.90	0.90	0.90	0.70	Accepted
51	The compassionate and kind staff and communication skilled of personnel specialist of hospital for staff orientation	0.88	0.88	.87	0.60	Accepted

questions in 5 above mentioned dimensions. Then, Lawshe<sup>18</sup> method was used to determine content validity index (CVI) and content validity rate (CVR)

of the questionnaire. The criteria for accepting or rejecting question were as the following (table1): 1) Accepting questions if the CVR calculated to 0.42 or

more; on the contrary rejection happened if it equal to under mentioned quantity. 2) Accepting questions of the CVI calculated to 0.79 or more; on the contrary rejection happened if it equal to under mentioned quantity. Finally, the CVI as well as CVR of the whole questionnaire were determined as 0.85 and 0.60 respectively. In addition, the Spearman correlation coefficient obtained as 0.85.

**Construct validity:** To determine construct validity the questionnaires filled by 263 IPD hospitals physicians, nurses and staff who were working there. To find latent variables and relationship between dimensions and variables EFA was used. Eventually the reliability of the questionnaire was determined 0.678 by Cronbach alpha coefficient (table 2).

## Discussion

In this study, the valid and reliable questionnaire for Iranian IPD hospitals developed for the first time. The main authors' concentration was to ensure reliability and content as well as face validity of the questionnaire. The expert panel endeavors were to keep all critical items, merged the same ones and

removed repeated or unnecessary items. Our findings showed that the questionnaire CVI was 0.85. According to Politet al, (2007)<sup>19</sup> and Wynd et al, (2003)<sup>20</sup> investigations, more CVI led to the more essential and important items that selected to measure one variable. While et al, (2008)<sup>17</sup> calculated CVI as 0.77 and Prakash et al, (2016)<sup>21</sup> computed it as 0.96 which both developed a SERVQUAL medical tourism questionnaire for hospitals that filled by foreign nationals.

Furthermore, the final version of questionnaire divided in 5 specific sections which were exactly derived from World health Organization (WHO) framework for hospital performance assessment in accordance with Veillard et al, (2005)<sup>10</sup> study. Indeed, the Cronbach's alpha coefficient calculated as 0.687 in comparison to other investigators study was acceptable for new instrument<sup>22</sup>. However, this amount was lower than Qolipour et al, (2008)<sup>17</sup> which calculated as 0.837 and Ajmera et al, (2015)<sup>23</sup> which was 0.920 due to the differences between the latter type, number of questions and even the context of study. Besides, both latter were focused on international patients and demonstrated their perspective on hospital quality of

**Table 2:** Cronbach alpha coefficient of the questionnaire.

No.	Cronbach's Alpha	No.	Cronbach's Alpha	No.	Cronbach's Alpha
1	.679	18	.686	35	.681
2	.678	19	.681	36	.682
3	.688	20	.682	37	.688
4	.678	21	.685	38	.682
5	.680	22	.682	39	.678
6	.684	23	.684	40	.680
7	.679	24	.680	41	.687
8	.681	25	.686	42	.685
9	.686	26	.683	43	.691
10	.687	27	.683	44	.683
11	.688	28	.680	45	.686
12	.680	29	.682	46	.688
13	.684	30	.684	47	.681
14	.688	31	.681	48	.681
15	.687	32	.682	49	.683
16	.681	33	.679	50	.687
17	.683	34	.680	total	.687

care. Conversely, some other investigations such as Faraji Khiavi et al, (2018)<sup>24</sup> developed valid questionnaire with the same methodology to ours for outpatient of the hospital.

Regarding the content of questionnaire, our findings presented 45 questions which were mainly aligned with Veillard et al, (2005)<sup>10</sup>, Queensland (2015)<sup>11</sup> and MTQUA (2016)<sup>6</sup>. In particular, whereas Veillard et al, (2005)<sup>10</sup> could not find any staff orientation items on turnover, vacancy and absence through international as well as national hospital websites. While, Queensland government (2015)<sup>11</sup> developed key performance indicators (KPI) for health service performance management framework in four dimensions of effective-safety and quality, equity and effectiveness-access, efficiency and financial performance and effectiveness-patient experience. In fact, MTQUA (2016)<sup>6</sup> selected annually top best international hospitals globally with its own criteria which were not explained comprehensively through its website.

Through this study, EFA was used as an extra item to measure construct validity of the questionnaire which was parallel with the belief of Osborne *et al*, (2009)<sup>25</sup> that strongly recommended in all studies on variable measurement in addition to EFA, the construct validity of the instrument should be estimated.

## Conclusion

Finding of the study demonstrated that the standard questionnaire for assessing international hospital performance as a valid and reliable tool included of 45 questions in 5 distinct dimensions. According to the findings of this study, it is strongly recommended not only hospital managers could use this questionnaire as a self-assessment tool for identifying strengths and weaknesses of quality of their hospitals but also assessors or inspectors utilizing this tool for ranking international hospitals and developing improvement plan for them.

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