# Evaluation of the Validity and Reliability of the Persian Version of Iowa Satisfaction with Anesthesia Scale in Iran

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| A R T I C L E   I N F O | A B S T R A C T |
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| | **Introduction:** The interaction between the doctor and the patient is achieved when the physician is able to communicate effectively with the patient. Iowa Satisfaction with Anesthesia Scale (ISAS) is a tool designed for this purpose. The ISAS is designed originally in English and it is under study in Iran; therefore, this study aimed to translate this scale into Persian and evaluate its validity and reliability.<br>**Material and Methods:** This observational study with a correlational design adopted an analytical approach and was conducted in 2016. The population consisted of patients undergoing surgery at Imam Reza Hospital. In total, 162 patients who met the inclusion criteria were enrolled in the study. The inclusion criteria were patients: 1) aged 18 years and above, 2) transferred from the operating room to intensive care unit, 3) exposed to general anesthesia, and 4) willing to participate in the study. The validity and reliability of the Persian version of the questionnaire were assessed in this study.<br>**Results:** The patients completed the questionnaire in 5 min. The mean age of the patients was 57.39 years (range: 18-87 years), and 102 (63%) patients were male. Moreover, about 2.5% of the data went missing and the Cronbach's Alpha was obtained at 0.85. The patients completed the questionnaire in 5 min. The mean age of the patients was 57.39 years (range: 18-87 years), and 102 (63%) patients were male. Moreover, about 2.5% of the data went missing and the Cronbach's Alpha was obtained at 0.85. In addition, the correlation analysis showed that Iowa scale was significantly correlated with the physical role (PR) (P=0.007), body pain (BP) (P=0.002), emotional role (ER) (P=0.007) and general health (GH) (P=0.012). Furthermore, the Patient Satisfaction Questionnaire had a significant correlation with the IOWA questionnaire (P<0.001).<br>**Conclusion:** The validity and reliability of the Persian version of Iowa Satisfaction with Anesthesia Scale were confirmed in the Iranian context. |

## Introduction

The treatment of any disease is highly dependent on the interaction between the doctor and the patient (1), which leads to the accelerated and successful treatment of the disease. This successful interaction is achieved when the physician is able to communicate effectively with the patient. Many studies have shown that the inability of healthcare staff,

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especially physicians and nurses, to establish good relationships with patients incurs staggering costs.

Moreover, it makes patients dissatisfied with the treatment process. Consequently, they are urged to change their physician, generally develop a negative attitude towards treatment and health organizations, and not follow the therapist's guidelines. Research has shown that examinations less than 10 minutes hinder the establishment of proper communication and sympathetic examination between physicians and patients leading to the reduction of patient satisfaction.

Many physicians keep a favorable attitude toward the principles of communication with patients; however, they lack appropriate communication skills. Communication is a human skill and an integral part of the clinical skills of physicians. Therefore, the incorporation of training courses or workshops about the development of human communication skills in academic programs can help the medical staff, especially physicians and nurses, in the process of efficient and successful treatment of patients.

In clinical treatments, anesthesia is a commonly used method. Patient satisfaction reflects the quality of clinical care and offers an assessment of the quality of delivered services, experiences, and interaction with the healthcare system. This assessment can also highlight the impact of healthcare on patients (2). Monitored anesthetic care is a process in which the satisfaction of patients undergoing anesthesia is examined. Moreover, patient anxiety control can hugely influence pain control (3, 4).

Patient satisfaction under anesthetic care is a subject that has not been adequately addressed in the literature. In 1996-1997, a series of retrospective anesthetic studies were undertaken that examined patient satisfaction after general anesthesia in a large population of patients (more than 100 patients). The results of these studies showed a correlation between the patients' constraints and their satisfaction (5-11). Patient satisfaction is one of the factors that determine the quality of the outcomes of healthcare. Accordingly, Iowa Satisfaction with Anesthesia Scale (ISAS) is used to measure patient satisfaction after surgery. More precisely, this scale is actually employed to monitor anesthetic care (12, 13).

This scale has been utilized in several studies. Fernandes et al. benefited from this scale to measure patient satisfaction after cataract surgery (12). The content validity of the English version of this scale has already been confirmed in the intensive care units (12, 14, 15). The results of the mentioned study indicated that ISAS could be used to measure the satisfaction of patients with cataract (16). This scale is originally in the English language and it has been under study in Iran; therefore, the purpose of this study was to translate this scale into Persian and evaluate its validity and reliability.

## Materials and Methods

The study protocol was approved by the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran (code: IR.MUMS.REC.1395.382 in 2016.oct.29). This study was conducted on 162 patients in Imam Reza Hospital affiliated to Mashhad University of Medical Sciences, Mashhad, Iran, during December 2016-February 2017.

This observational study with a correlational design adopted an analytical approach. The population consisted of all patients undergoing surgery at Imam Reza Hospital. In total, 162 patients who met the inclusion criteria were enrolled in the study. The inclusion criteria were patients: 1) aged 18 years and above, 2) transferred from the operating room to intensive care unit, 3) exposed to general anesthesia, and 4) willing to participate in the study.

### Iowa Satisfaction with Anesthesia Scale

This scale consists of 11 items which are rated on a 6-point Likert scale ranging from -3 to 3+ (strongly disagree to strongly agree) (tables1 and 2).

### Short Form Health Survey-36 questionnaire

This questionnaire, which is used to assess the quality of life, has already been evaluated in terms of validity and reliability in Iran (17).

The background questions and concepts, constructs, and scales of the Short Form Health Survey-36 questionnaire (SF-36) are divided into

**Table 1.** The Persian version of Iowa Satisfaction with Anesthesia Scale (ISAS)

| |
|---|
| 1. I threw up or felt like throwing up |
| 2. I would want to have the same anesthetic again |
| 3. I itched |
| 4. I felt relaxed |
| 5. I felt pain |
| 6. I felt safe |
| 7. I was too cool or hot |
| 8. I am satisfied with anesthetic care |
| 9. I felt pain during the surgery |
| 10. I felt good |
| 11. I hurt |

**Table 2**. Alternatives for each of the questions

| |
|---|
| Disagree very much |
| Disagree moderately |
| Disagree slightly |
| Agree slightly |
| Agree moderately |
| Agree very much |

three categories. The first group includes questions. Part two consists of eight scales, each of which is made up of 2 to 10 items, such as physical function, physical constraints, physical pain, general health, vitality, social function, psychological problems, and mental health.

Moreover, the third category includes two summative assessments which are obtained from integrating the following scales, including physical health (physical function + physical constraint + physical pain + general health), and mental health (social function + psychological problems + mental health + vitality).

With the exception of one item that separately examines the modification of health status over a one-year period, the remaining items are considered in aggregating the scores of the SF-36's eight scales. Each question is used only to compute the score of one scale. For some questions, the scores are re-coded so that the scores of all scales are homogenous. The scores for each scale range from 0 to 100, with zero and 100 indicating the worst and the optimal situation at the desired scale, respectively.

### Patient Satisfaction Questionnaire

This questionnaire, which was originally prepared by the American Society of Internal Medicine, has been adapted by Farghini et al. for Iranian context. In addition, its validity and reliability have been confirmed (18). The questionnaire consists of 24 items regarding patient satisfaction with how s/he is treated with the physician (6 items), the manner of interview (4 items) and examination (2 items), how physician relates to and trains patients (4 items), how follow-up is undertaken (3 items), and how physician answers patient questions and offers them information (5 items). This instrument is rated on a 5-point Likert scale ranging from 0 to 4 (strongly disagree to strongly agree).

The total score of the questionnaire for all 24 items is in the range of 0 to 96. In the subscales, the range of scores is specified for how the physician treats patients (0-24), the manner of interview (16-0) and examination (8-0), how the physician communicates with patients (0-16), how follow-up is conducted (0-12), and how physician answers patients' questions (20-0).

### Evaluation of the reliability and validity of the scale

As recommended by the treatment and health organizations, a forward-backward translation method was adopted to render the scale (19, 20).

After a detailed review and cultural adaptation, few changes were made in the questionnaire and the provisional version of the scale was drafted in this study. The translation of some commonly used terminologies of the scale into Persian posed a translation challenge. Despite that, all of these terms and phrases were rendered into Persian as accurately as possible to obtain the final draft of the scale which was used in the study.

### Content validity

A group consisted of two anesthesiologists and one methodology specialist was formed to assess the content validity. In addition, they determined the content of items translated into Persian, and if required, some necessary changes were made.

### Criterion Validity

The SF36 and Patient Satisfaction Questionnaire (PSQ) were utilized to assess the criterion validity of the translated and modified questionnaire. The criterion validity of ISAS was assessed based on the correlation analysis of these questionnaires. According to the definition, the correlation coefficients of 0.4 to 0.6 are considered as relatively valid, 0.6 to 0.8 as valid, and above 0.8 as strongly valid.

### Reliability

The reliability of the scale was evaluated using the test-retest method. For this purpose, a Wilcoxon rank sign test was used. The consistency of items was also assessed by Cronbach's alpha. A re-test or re-test procedure involves the administration of the same test more than once to a group of subjects under identical conditions. To obtain the reliability coefficient with this method, the measurement instrument was first implemented on a group of the subject. Subsequently, it was again administered to the same group under identical conditions with a 72-h interval. The scores obtained from the two tests were summed up and the calculated correlation coefficient was considered the reliability of the tool.

## Results

The patients completed the questionnaire in 5 min. The mean age of the patients was 57.39±14.5 years (range: 18-87 years), and 102 (63%) patients were male. In addition, about 2.5% of the data went missing (Table3).

### Assessment of scale reliability

The results of consistency analysis indicated a Cronbach's Alpha of 0.85, which suggests the desired reliability of the scale. The results of the

**Table 3.** Demographic characteristics of patients

| | |
|---|---|
| Age, mean (SD) | 57.391(14.5) |
| Weight, mean (SD) | 68.60(16.27) |
| Height, mean (SD) | 1.65(13.74) |
| Sex, N (%) | |
| Male | 102(63) |
| Female | 56(34.6) |
| Level of education, N (%) | |
| Primary school | 102(62.9) |
| Secondary school | 36(19.3) |
| Higher education | 25(15.5) |
| Job, N (%) | |
| Unemployed | 69 (42.6) |
| Office job | 7(4.3) |
| Self-employed | 76(47) |
| Others | 1(0.6) |

Wilcoxon test for test-retest of the Persian version scale revealed no significant differences in terms of pretest and posttest scores in all items. The significance level was obtained higher than 0.05 in all cases, which indicates the reliability of this instrument.

### Assessment of scale validity

The validity of the scale was evaluated by examining the relationship between the scale under study and scales, such as SF36 of which its validity and reliability had already been established. The correlation analysis showed that Iowa scale was significantly correlated with PR (P=0.007), BP (P=0.002), ER (P=0.007) and GH (P=0.012). The PSQ questionnaire had a significant correlation with the IOWA questionnaire (P=0.00) (Table 4)

**Table 4.** Assessing the validity of the scale by comparing correlation with other scales

| | | SF-36 Score | | | | | | | | PSQ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PF | RP | BP | SF | MH | RE | VT | GH | |
| Iowa SCORE | r | -.117 | -.220** | -.246** | -.272** | -.043 | -.218** | -.148 | .205* | .311** |
| | p | .154 | .007 | .002 | .001 | .597 | .007 | .071 | .012 | 0.00 |

## Discussion

Patient satisfaction and its determinants play a pivotal role in the treatment procedure of patients (21). Therefore, it is of crucial importance to study factors that affect patient satisfaction (22, 23). In fact, the results of the ISAS regarding the items, such as "I felt pain" or "I threw up or felt like throwing up" can affect drug therapy (12, 24, 25).

The results of this study indicated the significance of Iowa scale reliability. The questionnaires of which their reliability and validity had already been demonstrated were compared to assess validity. The results showed that the IOWA scale was significantly correlated with the PSQ. In addition, there was a significant correlation between IOWA and SF36 regarding most items. Therefore, the Persian version of IOWA Persian was shown to possess adequate validity and reliability.

In a clinical trial, patient satisfaction was evaluated using the Mental Adjustment to Cancer questionnaire. The authors stressed the importance of patient satisfaction assessment in light of the fact that several factors can affect satisfaction. They reported an internal consistency of 0.84 (26), which is close to the results of this study. In general, high internal consistency suggests that this tool can be used as an integral part of anesthesia.

In a study conducted by Luisa Fernanda Jiménez García et al, most subjects had a primary level of education (27). The results of the

mentioned study were consistent with this study finding in which 62.9% of the patients had low levels of education.

In this regard, Dexter et al. stated that some preliminary explanations before filling out the questionnaire should be given to patients with low level of education in order to avoid any possible confusion. This may explain the reason that some items in the SF36, such as physical functioning (PF) and vitality (Vt) were not significantly correlated with ISAS. In addition, culture can also influence the completion process of some parts of the SF36 or ISAS questionnaires. The test- re-test method is often used to evaluate the consistency of the components of a measuring instrument; however, it has weaknesses that should be considered. For instance, the results of the re-test can be influenced by the subject's training (experience) which impairs the reliability of the measuring tool. Therefore, it can be concluded that the Persian version of this scale has adequate validity and reliability.

## Conclusion

The ISAS is originally designed in English and due to the unfamiliarity of many Iranian patients with English text, it is necessary to translate this scale into Persian to make it more accessible to patients. Moreover, the reliability and validity of the Persian version of this scale were assessed before distributing it among patients. Accordingly,

it was ensured that this instrument could measure patient satisfaction accurately.

## Acknowledgments

## Conflict of Interest

The authors declare that there are no conflicts of interests regarding the publication of the study.

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