

Usability of Iranian Primary Vitiligo Patient Registry (IPVPR): A Pilot Study

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Abstract. Background: Usability is essential for the acceptance and success of vitiligo patient registry system. Poor usability could decrease system efficiency and effectiveness, and have a negative impact on using the system and providing services. This study aims to evaluate the usability of vitiligo patient registry system. Methods: This pilot study was conducted in 2021. In total, 17 users who were working in the vitiligo ward participated in the study. System usability scale (SUS) was used to evaluate the usability of vitiligo patient registry system. Results: In the usability evaluation stage, the mean score of the system usability scale was obtained as 77.79. Conclusion: Developing vitiligo patient registry system with high usability and making decisions based on the registered data could provide better understanding of this disease and facilitate research in this field. Application of this system and its acceptance by users could decrease costs and increase effectiveness and quality of services.

Keywords. Registry system, Vitiligo, Usability, System Usability Scale (SUS)

Introduction

Vitiligo patient registry system could be used to study the natural history of disease in the population, identify risk factors, pathogenesis and optimal treatments and provide better understanding of disease progression and its impact on patients' quality of life (1). Ensuring the usability of this system by its users is among the basic requirements for providing high quality services and meeting individuals' needs (2). Usability is defined as the extent, to which a product could be used by specific users in a specific context, in order to achieve the specified goals effectively, efficiently and satisfactorily (3). Having this feature, the system could help users perform things quickly and easily. Moreover, usability is directly associated with clinical productivity, user fatigue, error rate as well

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as user satisfaction (4). Poor usability of clinical information systems could affect users' performance and lead to fatigue, low productivity, medical errors and threats to patient safety (5). Therefore, organizations that are aware of the importance of usability seek to design systems with high usability. SUS is the most widely used and standard scale for evaluating the usability of various products and services, and has advantages such as easy to use, low cost, providing quick feedbacks and being non-exclusive and applicable for all types of user interfaces in the situations where time and resources are limited (6-8). To the best of our knowledge, no study has ever been conducted on the usability of vitiligo patient registry system from the perspective of its users at Razi Skin Hospital, as the only center that uses this system. Therefore, this study examined the usability of this system. The obtained results could help identify and solve usability problems of the mentioned system.

1. Method

This pilot study examined the usability of vitiligo patient registry system in the vitiligo ward of Razi Skin Hospital in June, 2021. A 10-item questionnaire designed by John Brooke was applied to measure the system usability (9). The research population included all users of the vitiligo patient registry system, including 7 dermatologists, 9 nurses and 1 health information manager working in the vitiligo ward of Razi Skin Hospital. The usability questionnaire was provided to these users and they were asked to work with the system for at least 10 days under the supervision of the research team and fill out the questionnaire. Each item was scored from 1 (strongly disagree) to 5 (strongly agree). To obtain a score for odd items, one unit was deducted from the score given to each item. For even items, the score given to each item was deducted from the number of 5. The sum of these scores was multiplied by 2.5 and the final score was obtained, which ranged between 0 and 100. Scores higher and lower than 68 were considered as higher and lower than the average level, respectively (10-12). After collecting the users' opinions, the mean and standard deviation of the points given to each item were calculated. The results were analyzed using SPSS 23.0.

Ethical approval was received from the Shiraz University of Medical Sciences, (Approval number: IR.SUMS.REC.1399.1219).

2. Results

The participants included 7 dermatologists (41.1%), 9 nurses (52.9%) and 1 health information management specialist (5.8%). In total, 14 participants (82.3%) were female and 3 (17.6%) were male. The majority of the participants ($n=9$, 52.9%) aged 30-40 years old and 10 participants (58.8%) had 10-20 years of work experience. The vitiligo patient registry system obtained the score of 77.79 by the users, indicating its acceptable level in terms of ease of use. Most of the users (mean=4.41) believed that the system functions had integrity and using the system increased their confidence. The majority of the users (mean=4.24) tended to use the system frequently. Although the users believed that the system was not complicated (mean=1.59) and it was easy to use (mean= 1.35), they required to receive training by a technical technician to work with the system (mean=2.18). Table 1 presents the results of usability of vitiligo patient registry system.

Table 1. Descriptive statistics of each item of system usability scale (SUS) for Iranian primary vitiligo patient registry (IPVPR)

System Usability Scale (SUS)		I think I would like to use the vitiligo registry system frequently	I found the vitiligo registry system unnecessarily complex	I thought the vitiligo registry system was easy to use	I think that I would need the support of a technical person to be able to use the vitiligo registry system	I found the various functions in the vitiligo registry system were well integrated	I thought there was too much inconsistency in the vitiligo registry system	I would imagine that most people would learn to use the vitiligo registry system very quickly	I found the vitiligo registry system very cumbersome to use	I felt very confident using the vitiligo registry system	I needed to learn a lot of things before I could get going with the vitiligo registry system	Total score
Mean		4.24	1.59	3.29	2.18	4.41	1.53	3.59	1.35	4.41	2.18	
S.D		0.75	0.71	0.47	0.88	0.61	0.51	0.71	0.49	0.61	0.88	
User	1	3	1	3	2	4	2	3	1	4	1	75
	2	4	1	3	1	5	1	3	1	5	1	87.5
	3	3	2	3	2	5	1	3	1	4	2	75
	4	4	2	3	2	5	1	3	1	5	2	80
	5	3	1	3	3	4	1	3	2	4	3	67.5
	6	4	1	4	1	5	2	4	1	4	3	82.5
	7	5	2	3	2	5	1	3	1	5	1	85
	8	5	2	3	3	4	2	5	1	5	3	77.5
	9	4	2	3	2	4	2	4	2	4	2	72.5
	10	5	2	4	1	4	2	4	2	4	2	80
	11	5	1	4	1	4	2	4	1	5	2	87.5
	12	5	3	3	2	5	1	5	1	5	3	82.5
	13	4	1	4	2	5	1	4	1	3	2	82.5
	14	4	1	3	3	5	2	3	2	4	2	72.5
	15	4	1	4	4	4	2	4	2	4	3	70
	16	5	1	3	3	4	1	3	1	5	4	75
	17	5	3	3	3	3	2	3	2	5	1	70
Total questionnaire scores												1322.5
Mean												77.79
S.D												6.05
Acceptable domain				0-64 : Unacceptable			65-85: Acceptable			85-100: Excellent		

NOTE: SUS Score above 68 is considered excellent usability based on the general guideline on interpretation SUS score.

3. Discussion

The results indicated the designed software had an acceptable level in terms of ease of use by obtaining the score of 77.79 from the users. High system usability from users' perspective shows the system success and strong correlation between the system and users. A usable system should be learnable, efficient and memorable (13). Poor usability of the system and lack of intention to its use continuously could cause a poor return on investment and decrease productivity (14). Results of evaluating the vitiligo patient

registry system from the target user's viewpoint showed the components of the designed software were integrated properly and there was the minimum amount of inconsistency between its components (mean=1.53), so that most of the users tended to use it frequently. The results revealed although the system design was not complicated, some users required basic training by a technical technician in order to use it. It should be noted that training is not only specific to the registry system, but it should be considered for all systems in order to improve usability and reduce error rate (15). Several studies have reported that usability problems of the information system could increase user error and decrease effectiveness and trust in the system and, ultimately, have a negative impact on the quality of healthcare services provided (16, 17). Lack of attention to these problems could affect the quality of users' interaction with the system and healthcare services (18) and lead to fatigue and abandonment of the system by users in the long term. The strength of this study was that the system was evaluated by real users in the vitiligo ward. These users participated in the software design phase and were familiar with all functions of the system, which validated findings of the study. The main limitation of the study was that the system usability results could not be generalized. Considering that the system was implemented in only one center, it was evaluated by the users of the same center. Although attempts were made to compensate for this limitation by increasing the sample size and including all the users, it is suggested to quantitatively and qualitatively evaluate the system usability on a larger scale considering a larger sample size in future studies. To adapt the system to users' needs, an information needs assessment should be performed before designing the system. Before conducting the evaluation process, users should be fully familiar with the system features and the necessary training should be given to them for using the system properly. Moreover, it is better to use the specific methods designed for evaluating registries in order to evaluate the usability of registry systems.

4. Conclusions

The results indicated that the vitiligo patient registry system could greatly satisfy the users, so that they tended to use the system frequently and believed that using it increased their confidence. Some of the users stated that training should be given by a technical expert and planning is required for the continued use of the system.

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