

Measuring and describing perceived quality on physiotherapy practice management software

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ABSTRACT

Introduction: Despite the growing trend in the use of digital technologies in physiotherapy, the overall adoption and satisfaction of both, practice management software (PMS) and electronic health records in physiotherapy clinics has been low and slow over time. Satisfaction of expectations or perceived quality (PQ) is an abstract construct based on the discrepancy between expectations and perceptions, to measure the satisfaction of physiotherapists on PMS. This study aims to develop and validate an instrument to measure PQ on PMS, and to describe the PQ of the currently available physiotherapy PMS.

Methods: Instrument development study with validity and reliability testing. The development of this questionnaire was conducted in 3 phases: identification of attributes to be explored; development of the item pairs and pretesting; pilot study for item reduction, and psychometric testing. The questionnaire was distributed to chartered physiotherapists. A total of 144 participants completed the questionnaire.

Results: A series of analyses were conducted to assess item reduction, factor structure of the questionnaire and metric properties of multi-item scales. From the initial 43 attributes, the final version of the Quality Questionnaire on Physiotherapy Practice Management Software consisted of 24 items of PQ on PMS, structured in 3 areas (clinical care, administrative activities, and accounting), which included 11, 9, and 4 items grouped into 4, 3, and 2 scales respectively. The questionnaire proved to be reliable and valid. In multitrait scaling analysis, all scores had strong item-scale correlations, excellent item scaling success, and good internal consistency (Cronbach alpha coefficients of >0.7).

Conclusions: Our study provides a valuable PQ questionnaire on PMS attributes for clinical care, administrative activities, and accounting. The attributes related to clinical care and control stock supplies showed a worse PQ. This suggests that those functions related to clinical care should be improved to facilitate greater satisfaction with physiotherapy PMS.

1. Introduction

Information and communication technologies have acquired a growing importance in healthcare. Many institutions like United Nations, the World Health Organization or the European Union widely recognize the value of digital technologies to improve healthcare delivery [1–4]. In physiotherapy, practice management software (PMS) are becoming more popular [5,6] understanding PMS as a software designed to help healthcare providers manage the administrative and operational aspects of their practices, such as appointment scheduling, billing and payment processing, patient record management, and reporting [5]. The global physical therapy software market size was estimated at USD 1.09

billion in 2021 and USD 1.16 billion in 2022, growing at a compound annual growth rate of 10.1 % from 2022 to 2030 to reach USD 2.52 billion by 2028, with North America dominating the market with a share of over 52 % in 2021 [7]. Despite the growing use of PMS in physiotherapy, the low levels of adoption and satisfaction are some of the most common problems found with these software [8–12], finding that in some countries such as the USA or Canada, only around one in four physiotherapists uses PMS [6,13]. Also, some barriers to implementation, related to software design and performance, have been identified like software inadequacy, lack of information system developers' knowledge on physiotherapy processes and workflow or not addressing tangible and practical needs [10,11]. To solve this, multiple

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recommendations have been proposed to increase physiotherapists' positive attitudes and satisfaction with digital technologies [11,14–16]. They mainly focused on the design of an adequate software, which should satisfy physiotherapists' expectations [11].

Satisfaction of expectations is an abstract construct based on the discrepancy between expectations and perceptions, which has been previously described [17] and measured in multiple contexts [18–20]. Often also referred to as perceived quality (PQ) [20], its measurement is based on questionnaires including both expectations and perceptions of multiple attributes [21]. The importance of measuring PQ is justified because if expectations are greater than perceptions, then there is a disconfirmation of expectations, PQ is low and hence customer dissatisfaction occurs as predicted by the expectation-confirmation theory (ECT) [22].

Physiotherapy PMS are complex engineering products [23], whose concept and design are expected to be multi-dimensional. No validated measurement tool seems to currently exist, that assesses physiotherapists' PQ on physiotherapy PMS. The purposes of this study were to develop and validate an instrument to measure PQ or satisfaction of expectations on physiotherapy PMS, and to describe the PQ of the current PMS available. The following sections describe the development and measurement of the proposed scale, and the various steps involved. The questionnaire will be named the "Quality Questionnaire on Physiotherapy Practice Management Software" (QQPPMS).

2. Methods

The QQPPMS was developed in 3 phases from September 2021 to December 2022. In phase 1, the attributes relevant to physiotherapy PMS were identified in the literature review and focus groups with physiotherapists. In phase 2, several item pairs were developed, each item was recast into two statements: one to measure the expectations that PMS generates, and the other to measure the perceptions regarding their current PMS. The item pairs were then tested for clarity and relevance in a cognitive pretest with physiotherapists. In phase 3, a pilot study and psychometric testing was carried out for item reduction and to test the validity and reliability of the QQPPMS.

2.1. Phase 1: Identifying the attributes on PMS

A literature review followed by a qualitative study using focus groups with physiotherapists were performed to identify the attributes to be explored. For the data collection during the focus groups, videotape, audio, and field notes were used. The results of this phase are reported elsewhere. In summary, six domains of attributes grouped in two areas were identified: clinical care and administrative activities (Fig. 1).

2.2. Phase 2: Development of the items and pretesting

The objective of this phase was to construct questions, based on applying the ECT to the identified attributes. An initial set of 43 item pairs was distributed among the six domains described above, 22 in the clinical care area and 21 in the administrative activities area. For the expectations, each area included an overall question that was phrased, "The desirable software for your center should allow (the following attributes) ..." For the perceptions, each area included an overall question that was phrased, "The software you currently use in your center allows (the following attributes) ...". A 7-point Likert scale was used for the responses, ranging from "very much disagree" to "very much agree". This design enabled the calculation of difference scores using the formula $PQ = \text{Expectations} - \text{perceptions}$, where PQ is perceived quality and it is inversely proportional, that is, higher PQ values mean lower perceived quality.

The questionnaire was pretested for clarity and adequacy of content with 11 physiotherapists in 2 focus groups. Some questions were rephrased because they were leading to misunderstandings. The

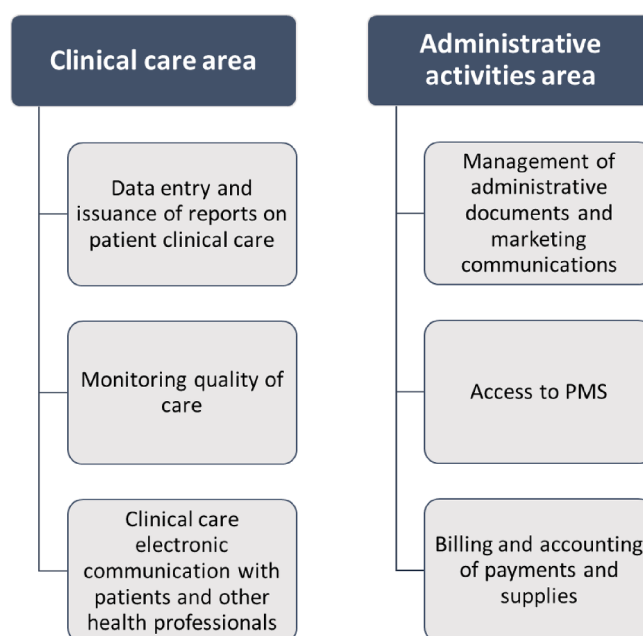


Fig. 1. Domains of attributes identified in the qualitative phase.

instrument finally distributed for evaluation comprised 43 item pairs.

2.3. Phase 3: Pilot study for item reduction and psychometric testing

The objective of this phase was to determine unidimensional PQ scales with reliability and validity. Psychometric testing of the questionnaire was carried out, surveying physiotherapists in the Valencian Community (Spain) during 6 months by completing the online questionnaire on LimeSurvey. The link to the questionnaire was distributed by the ICOFCV (Illustrious Official College of Physiotherapists of the Valencian Community) to all chartered physiotherapists via email, and posted on their corporate social networks with the pertinent explanations. Eligible participants were all graduated physiotherapists. The main interest was on those with experience with PMS in order to measure both, expectations and perceptions. Nevertheless, those without experience ($n = 129$) were not excluded because their expectations were of interest for item reduction. Furthermore, the accounting area was considered a different area from administrative activities area so that it would only be answered by physiotherapists with experience in this field. Reminders were also sent 1 and 3 months later. The answers were totally anonymous and a cookie was set to avoid repeated participations.

A sequential item reduction was carried out. First, item pairs where the expectation item was poorly understood, showed poor variability or poor correlation with other items in the same conceptual domain were eliminated. Thus, a total of 15 item pairs were eliminated. On the remaining 28 item pairs, those whose PQ score (expectations minus perceptions) showed poor variability or correlation were also eliminated. On the item pairs finally selected, unidimensional scales were identified and tested for validity and reliability.

2.4. Data analysis

The participants' socio-demographic and clinical characteristics were analyzed using descriptive statistics. A series of analyses were conducted to assess item reduction, factor structure of the questionnaire, and metric properties of multi-item scales for each of the three areas (clinical care, administrative activities and accounting). All analyses were performed with the SPSS statistical software program in its version 28.0.

For the second item reduction, item pairs with PQ score standard

deviation of less than 0.60 were removed to avoid items that showed poor variability. Exploratory factor analyses were performed to identify the item pairs responsible for the covariation of the data. Principal components analysis and varimax rotation were used for the initial factor extraction. Item pairs with loadings of 0.50 or higher were retained, but items with factor loading of higher than 0.40 on more than 1 factor were removed [21].

A correlation matrix of all items for each area and scale was used in a multi-trait scaling analysis to test the extent to which items converge with and diverge from the themes. A method of averages was used to score scales, summing up the scores of each item in the corresponding scale and dividing it by the number of items in that scale. Correlations between each item and its hypothesized scale were calculated and corrected for overlap by not including them in the scale.

For each scale, scaling success rates were computed as the percentage of items within the scale that correlated more highly or significantly more highly with the hypothesized scale than with the other themes. An item correlated significantly more highly with its own scale if the correlation between the item and its hypothesized scale was more than 2 standard errors higher than its correlation with other scales [22]. Moreover, the Cronbach alpha coefficient was calculated to test the internal consistency reliability for each scale, >0.7 was considered acceptable.

Construct validation was evaluated using known-group validity and defining 2 groups: a subgroup of participants who rated the overall perception of quality of their current software as “good” or “very good” and another subgroup that evaluated it as “very poor”, “poor”, or “regular”. We hypothesized that the PQ scores (i.e., expectations minus perceptions) for all of the scales would be lower in participants with high evaluations of overall perception of quality than in those with poor overall perception of quality. A Student *t*-test was used to check the difference in the mean scale scores between these 2 groups. Also, the mean scores for the questionnaire responses across men and women were compared with a Student *t*-test for independent samples. Our hypothesis was that there would be no significant difference in the mean scores between these 2 groups.

3. Results

A total of 144 physiotherapists with experience in PMS completed the QPPMS. The participation included a similar gender proportion, 13 years of experience in average, and a clear predominance of the private sector. 66 % of participants (95 physiotherapists) performed accounting duties (e.g., charging patients) at work. The participants' characteristics are shown in Table 1. Twenty-seven different PMS were identified in the survey, where the most common were I-Fisio, Clinic

Table 1
Characteristics of participants.

Sex	Men	49 %
	Women	51 %
Age	<35	37.4 %
	35–50	54.4 %
	>50	8.2 %
	Others	33.3 %
Workplace	Physiotherapy clinic	76.3 %
	Hospital	4.4 %
	Primary health center	6.0 %
	Others	13.3 %
Job Position	Owner/Manager	41.5 %
	Employee in a private center	26.7 %
	Self-employed	23.7 %
	Employee in a public center	8.1 %
Years of experience	Average	13.3 years
Years working in that center	Average	8.6 years
Accounting duties at work		66.0 %
Number of PMS identified		27

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3.1. Item reduction, structure of the questionnaire and metric properties

Four items were eliminated because they did not satisfy the cut-off criterion of a variance greater than 0.60. In the clinical care area, two items initially grouped in the domain “workflow coordination” and one item in the domain “monitoring quality of care” were eliminated. In the accounting area, 1 item in the scale “billing and accounting” was deleted for the same reason. Thus, for the exploratory factor analysis we had 11 items in the clinical care area, 9 in the administrative activities area, and 4 in the accounting area. Table 2 shows the items included in the factor analysis of each area.

Generally, the multi-trait scaling analysis supported the scaling of

Table 2
Factor analysis of the 9 items in the administrative activities area and the 4 items in the accounting area.

		Value for factor			
Scales	Items	1	2	3	4
Clinical care area					
Data entry and issuance of reports	Editable templates for assessment	0.866			
	Editable body charts	0.803			
	Templates for exercise programs and recommendations	0.801			
	Digitalized patient-reported outcome measures	0.784			
	Templates for patients' clinical reports	0.769			
Patient portal	Online appointment booking		0.883		
	Consult scheduled visits		0.854		
Digital Health Interventions (DHI)	Videoconference			0.901	
	Chat			0.823	
Monitoring quality of care	Healthcare activity reports				0.898
	Quality measures				0.749
Administrative activities area					
Issuance of routine documents	Templates for common documents	0.884			
	Automate the issuance of routine documents	0.877			
	Easily fill in and sign documents for patients and professionals	0.665			
Marketing strategies	Repository of standard messages		0.800		
	Allows mass mailings of communications		0.791		
	Links to external communication applications		0.712		
Data security	Saving and backup copies			0.841	
	Security measures against computer threats			0.776	
	Configuration of users and access permissions			0.701	
Accounting area*					
Billing and accounting	Fees configuration	0.955			
	Flexibility in the application of fees	0.926			
Control stock supplies	Stock reports		0.926		
	Notifications to replenish consumables		0.894		

* For this area, only physiotherapists with accounting duties at work have been considered (n = 95).

items into the hypothesized scales in the three areas (Table 3). In the clinical care area, the item-scale correlations ranged from 0.815 to 0.949, in the administrative activities area, the item-scale correlations ranged from 0.753 to 0.891, and in the accounting area, the item-scale correlations ranged from 0.940 to 0.973. In all areas, there was a percentage of scaling success of 100 % for all the scales. Their reliability was acceptable to excellent, with Cronbach alpha coefficients ranging from 0.733 to 0.943 (Table 3).

As expected, generally the mean scores of PQ between subgroups of participants with high evaluations of overall perception of quality and those who perceived overall quality to be poor differed significantly (Table 4). The difference in the mean scores of PQ ranged from 0.14 to 2.24 points, with lower PQ scores for the first group. As hypothesized, there was no significant difference in the PQ scale scores between men and women subgroups.

The final version of the QPPMS consisted of 24 items of PQ on PMS, structured in 3 areas, which included 11, 9, and 4 items grouped into 4, 3, and 2 scales in clinical care, administrative activities, and accounting areas, respectively (see Appendix 1).

3.2. Description of perceived quality scores

Table 5 shows perceptions, expectations and PQ scores. While the expectations were high in most of the scales for the 3 areas (only “DHI” was lower than 5.30 out of 7), the perceptions were lower in the scales for the clinical care area (values lower than 3.30) than most of the rest of the scales (greater than 3.72 except for “Control stock supplies”). This means that the PQ scores for the clinical care area were higher (greater than 2.13) than most of the rest of the scales (four of the remaining five scales scored below 1.98), indicating a worse PQ in the clinical care area than in the other areas.

Figs. 2 and 3 show the distribution of the PQ scores reported in each one of the 24 items. In nine of the eleven clinical care area items, 50 % of the physiotherapists scored PQ > 2.5, and in seven, 25 % of the physiotherapists scored a PQ > 5. In contrast, in four of the nine items in the administrative area and in the two items of the “Billing and accounting” accounting area scale, 50 % of the physiotherapists scored a PQ equal or minor to 0. In addition, in the remaining five items from the administrative area 50 % of the physiotherapists scored the PQ < 2.5.

4. Discussion

To the best of our knowledge, this is the first study to examine the PQ

of physiotherapists towards PMS. For that purpose, we developed and validated an instrument according to the ECT, the QPPMS. The questionnaire, which proved to be reliable and valid, was structured in three areas; clinical care, administrative activities, and accounting, with nine scales in total. In general terms, the PQ of the clinical care area was worse than the other two areas, where only the “control stock supplies” scale scored similar to the clinical care area scales.

QPPMS was developed from a qualitative study in which 12 domains of attributes were identified. The content and number of domains identified in the QPPMS was very similar, since QPPMS was finally structured into 9 scales with 24 items. Only 2 domains were not integrated in the questionnaire (workflow coordination and interoperability), while 2 domains merged into 1 (data entry and issuance of reports). Therefore, it seems that our sequential selection of items was very efficient.

In multitrait scaling analysis, all scores had strong item-scale correlations, excellent item scaling success, and good internal consistency (Cronbach alpha coefficients of >0.7). Construct validity confirmed that those participants who had a high overall perception of quality for their PMS, scored better on the PQ for each of the scales than those who had a low overall perception of quality, except for patient portal and DHI. These two scales had similar scores between groups. Possibly, the high levels of inexperience with telerehabilitation tools (between 83 % and 95 % of physiotherapists do not use them) [15,24], explains why the group with high overall perception of quality continued to score a poor PQ for items on these scales.

While most of the attributes were expected by physiotherapists (i.e., showed a high mean in their expectations), those from the clinical care area and “control stock supplies” scale showed low perception scores, which translated into high PQ scores (i.e., poor PQ). In this sense, in 81 % of the clinical care area attributes half of the physiotherapists scored PQ > 2.5, while in the other two areas, this only occurred in the “control stock supply” attributes. For example, in 55 % of the remaining attributes, half of the physiotherapists scored PQ ≤ 0. These results would indicate that the support of current PMS for clinical care tasks leads to dissatisfaction among physiotherapists without reaching levels of satisfaction that justify their use for such purposes. This could be caused mainly because many of the software have been adapted from other health professions, especially medicine, so while administrative tasks may be common, those for clinical care purposes are more specific to each profession, especially those of telerehabilitation.

One of the main recommendations to increase the implementation of PMS in physiotherapy and improve the satisfaction of physiotherapists is to know their needs, incorporating the perspectives of end users in such software [11]. Thus, to the best of our knowledge, this is the first study to describe the PQ of physiotherapists on PMS attributes. Our findings have wide applicability and would suggest that while current PMS would satisfy physiotherapists for administrative activities, this is not the case for clinical tasks, so developers should reinforce the attributes of PMS for clinical tasks. In addition, we have developed and validated a questionnaire for this, which could be used as a model in other groups of physiotherapists from other regions.

Despite our novel contributions, this study is not without limitations. First, the study was carried out in the Spanish region of the Valencian Community and most of the participants were living or working in this region, so caution must be applied when trying to extrapolate the results. Second, as the recruitment method was mass mailings to physiotherapists, an optimal level of control over the sample was not obtained. Third, while the quality model defined by ISO/IEC 25010 determines the requirements to be taken into account to evaluate the properties of a given software product, this study, due to the particularities of PMS in physiotherapy, proposes its own model generated in different phases and determined by expectations and perceptions of the physiotherapists. Although aspects such as security are common in both models, future studies could evaluate the quality of PMS following the ISO/IEC 25010 standard.

Table 3
Summary of Results for Multitrait Scaling Analysis for the three areas.

Scale	Item-scale correlation range (Median)	% Scaling success	Cronbach alpha
Clinical Care area			
Data entry and issuance of reports	0.901–0.925 (0.913)	100	0.900
Patient portal	0.815–0.872 (0.845)	100	0.811
DHI	0.922–0.933 (0.927)	100	0.837
Monitoring quality of care	0.875–0.949 (0.911)	100	0.846
Administrative activities area			
Issuance of routine documents	0.823–0.891 (0.866)	100	0.829
Marketing strategies	0.753–0.859 (0.811)	100	0.742
Data security	0.760–0.843 (0.807)	100	0.733
Accounting area			
Billing and accounting	0.940–0.951 (0.945)	100	0.875
Control stock supplies	0.973–0.973 (0.973)	100	0.943

Table 4
Construct validity of scales*.

Scale	Overall perception of quality			Sex		
	Low	High	Mean differences (p value)	Men	Women	Mean differences (p value)
Clinical Care area						
Data entry and issuance of reports	3.26	2.35	0.91 (0.012)	3.03	2.67	0.36 (0.149)
Patient portal	2.70	2.13	0.57 (0.098)	2.65	1.91	0.74 (0.053)
Digital Health Interventions	2.25	2.11	0.14 (0.370)	2.26	2.15	0.11 (0.389)
Monitoring quality of care	2.50	1.64	0.86 (0.022)	2.02	2.18	−0.16 (0.336)
Administrative activities area						
Issuance of routine documents	2.90	0.66	2.24 (0.001)	1.94	1.47	0.47 (0.080)
Marketing strategies	2.48	1.60	0.88 (0.011)	2.18	1.76	0.42 (0.111)
Data security	2.21	0.92	1.28 (0.001)	1.35	1.37	−0.02 (0.472)
Accounting area						
Billing and accounting	2.62	0.64	1.88 (0.001)	1.63	1.42	0.25 (0.276)
Control stock supplies	3.28	2.20	1.08 (0.025)	2.75	2.62	0.15 (0.382)

* The values expressed are of perceived quality.

Table 5
Perceptions, expectations, and perceived quality scores for each scale by area.

Scale	Mean (SD)		
	PS	ES	PQ (ES-PS)
Clinical Care area			
Data entry and issuance of reports	3.23 (1.94)	6.09 (0.94)	2.86 (2.08)
Patient portal	3.05 (2.26)	5.34 (1.66)	2.29 (2.30)
DHI	2.58 (1.98)	4.79 (1.41)	2.21 (2.28)
Monitoring quality of care	3.37 (2.15)	5.30 (1.35)	2.13 (2.21)
Administrative activities area			
Issuance of routine documents	4.84 (1.98)	6.55 (0.78)	1.71 (1.99)
Marketing strategies	3.72 (2.04)	5.70 (1.17)	1.98 (2.07)
Data security	5.16 (1.71)	6.52 (0.77)	1.36 (1.77)
Accounting area			
Billing and accounting	4.92 (2.35)	6.27 (1.08)	1.35 (2.24)
Control stock supplies	3.19 (2.46)	5.88 (1.35)	2.69 (2.37)

SD: standard deviation; PS: Perception score; ES: Expectation score; PQ: perceived quality.

5. Conclusions

The measurement of the PQ helps to indirectly identify which attributes can make physiotherapists to be satisfied or dissatisfied with PMS.

Appendix

Appendix 1

“Quality Questionnaire on Physiotherapy Practice Management Software” (QPPMS)

EXPECTATIONS ON THE ATTRIBUTES THAT THE DESIRABLE SOFTWARE FOR YOUR CENTER SHOULD OFFER

Please mark your degree of agreement/disagreement according to whether you consider each of the following attributes to be desirable or not.

Clinical care

THE DESIRABLE SOFTWARE FOR YOUR CENTER SHOULD ALLOW TO...

- 1 Access templates that define the anamnesis and examination of patients with specific pathologies
- 2 Access body map templates (or other similar tools) that can be used when assessing a patient
- 3 To Access therapeutic exercise templates (or guidelines) to select and customize a program to your patient.
- 4 Access questionnaires (e.g. VAS, NDI, DASH, SF-36) that can be used to measure the functionality of a patient
- 5 Access editable templates for issuing reports (e.g. clinical-legal, mutual insurance companies) to companies/clients on request
- 6 Your patients to book an appointment online
- 7 Your patients to consult online the dates of pending or completed visits
- 8 Make video calls with patients or other professionals

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This, in turn, helps PMS developers to learn about possible attributes that should be reinforced and/or improved to increase the use of PMS by physiotherapists. Our study provides a valuable questionnaire of PQ towards the PMS attributes for clinical care, administrative activities, and accounting. The attributes related to clinical care and “control stock supplies” showed a worse PQ than the rest, whereas a high percentage of physiotherapists indicated a satisfactory PQ for administrative activities attributes. Therefore, this suggests that the clinical care functionalities should be improved to facilitate greater satisfaction with physiotherapy PMS.

CRedit authorship contribution statement

Eduardo Arza-Moncunill: Conceptualization, Data curation, Methodology, Writing – original draft. **Rodrigo Martín-San Agustín:** Conceptualization, Formal analysis, Visualization, Writing – original draft. **Francesc Medina-Mirapeix:** Conceptualization, Formal analysis, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

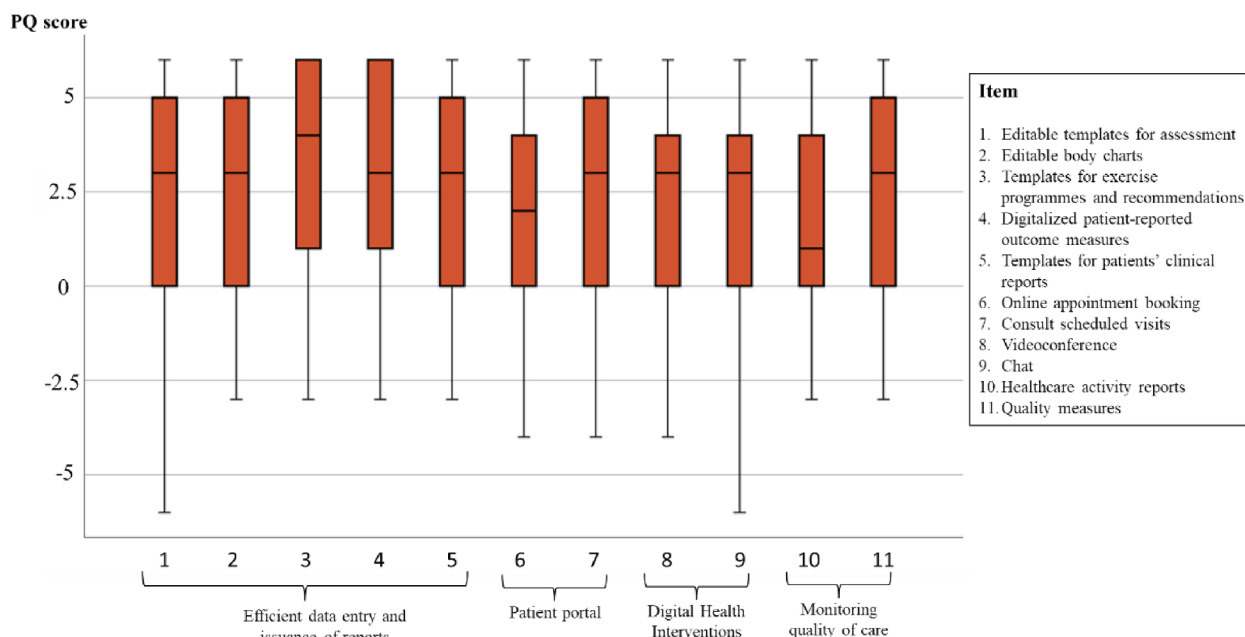


Fig. 2. Perceived quality scores of the 11 items in the clinical care area.

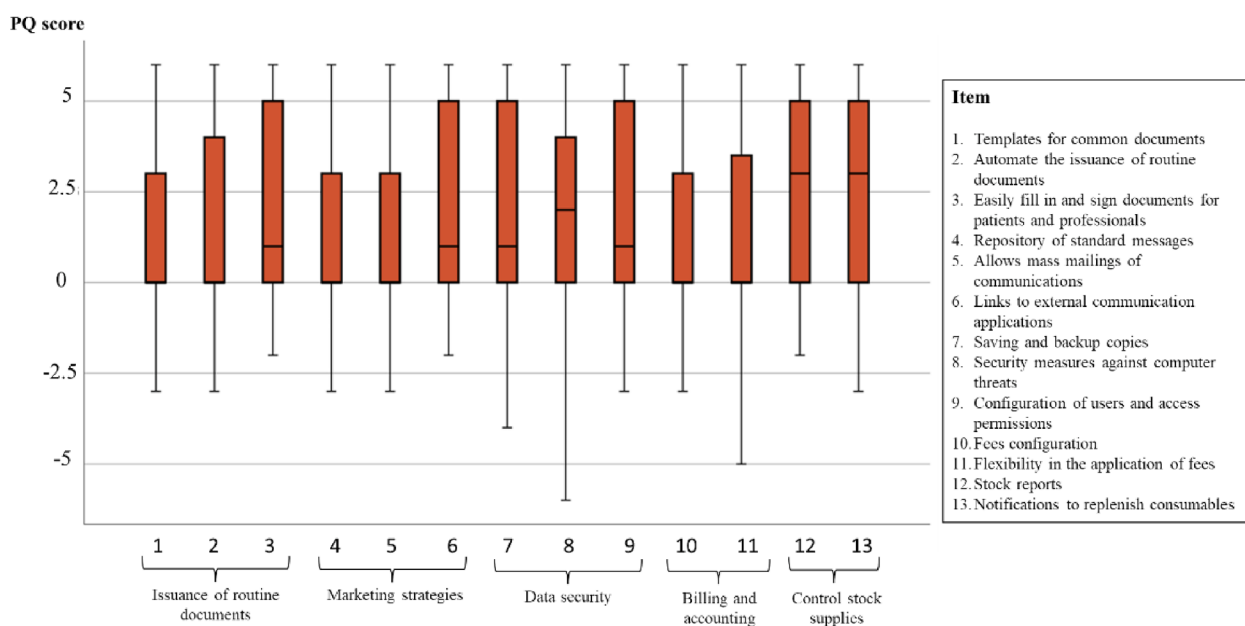


Fig. 3. Perceived quality scores of the 13 items in the administrative activities area (from 1 to 9) and accounting area (from 10 to 13).

(continued)

9 Chat with one or more patients

10 Periodically generate reports on the healthcare activity provided in the center (e.g. number of patients per pathology, number of sessions)

11 Periodically generate reports on the quality of healthcare provided at the center (e.g. results of satisfaction surveys)

Administrative activities

THE DESIRABLE SOFTWARE FOR YOUR CENTER SHOULD ALLOW TO...

12 Access invoicing templates or attendance proofs for issuing to companies/customers on request

13 Easily issue invoices, proofs or other common documents

14 Enable facility staff and patients to sign documents, consents or other authorizations (e.g. via Tablet)

15 Perform automatic backups and saves

16 Provide measures (e.g. anti-virus, encryption) against computer threats

17 Configure the software access permissions according to the profile of the employees

18 Access editable message templates to send to patients for a purpose (e.g. reminder, advertisement)

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-
- 19 Send mass communications (e.g. for advertising, promotions) to interest groups (runners, by gender, pathology)
 - 20 Use external applications (e.g. WhatsApp, Telegram) to send messages to patients

Accounting

- 21 Enter all current fees at the center
 - 22 Exceptionally apply flexible fees (e.g. for a discount)
 - 23 Generate reports on the center stock of consumables (available, usual consumption)
 - 24 Set up warnings to replenish some consumables (e.g. because your stock is low)
-

PERCEPTIONS ON THE ATTRIBUTES OFFERED BY THE CURRENT SOFTWARE IN YOUR CENTER

Mark your degree of agreement/disagreement according to whether or not you feel that the current software at your center allows each of the following attributes.

Clinical care

THE SOFTWARE YOU CURRENTLY USE IN YOUR CENTER* ALLOWS TO:

- 1 Access templates that define the anamnesis and examination of patients with specific pathologies
- 2 Access body map templates (or other similar tools) that can be used when assessing a patient
- 3 Access therapeutic exercise templates (or guidelines) to select and customize a program to your patient.
- 4 Access questionnaires (e.g. VAS, NDI, DASH, SF-36) that can be used to measure the functionality of a patient
- 5 Access editable templates for issuing reports (e.g. clinical-legal, mutual insurance companies) to companies/clients on request
- 6 Your patients to book an appointment online
- 7 Your patients to consult online the dates of pending or completed visits
- 8 Make video calls with patients or other professionals
- 9 Chat with one or more patients
- 10 Periodically generate reports on the healthcare activity provided in the center (e.g. number of patients per pathology, number of sessions)
- 11 Periodically generate reports on the quality of healthcare provided at the center (e.g. results of satisfaction surveys)

Administrative activities

THE SOFTWARE YOU CURRENTLY USE IN YOUR CENTER* ALLOWS:

- 12 Access invoicing templates or attendance proofs for issuing to companies/customers on request
- 13 Easily issue invoices, proofs or other common documents
- 14 Enable facility staff and patients to sign documents, consents or other authorizations (e.g. via Tablet)
- 15 Perform automatic backups and saves
- 16 Provide measures (e.g. anti-virus, encryption) against computer threats
- 17 Configure the software access permissions according to the profile of the employees
- 18 Access editable message templates to send to patients for a purpose (e.g. reminder, advertisement)
- 19 Send mass communications (e.g. for advertising, promotions) to interest groups (runners, by gender, pathology)
- 20 Use external applications (e.g. WhatsApp, Telegram) to send messages to patients

Accounting

IF YOU HAVE EXPERIENCE WITH PATIENT CHARGES FILL IN THIS SECTION, OTHERWISE GO TO THE NEXT SECTION (by clicking NEXT below).

- 21 Have all current fees at the center integrated
- 22 Exceptionally apply flexible fees (e.g. for a discount)
- 23 Generate reports on the center's stock of consumables (available, usual consumption)
- 24 Set up warnings to replenish some consumables (e.g. because your stock is low)

The final items are presented in this table. The style, format and answer options are not reproduced here. For the scoring, a 7-point Likert scale was used, ranging from "Very much disagree" to "Very much agree".

Summary points

What was known on the topic

- Adoption and satisfaction of practice management software (PMS) in physiotherapy has been low and slow over time.
- Multiple recommendations have been proposed to increase physiotherapists positive attitudes and satisfaction with digital technologies.
- These recommendations mainly focus on the design of an adequate software to satisfy physiotherapists' expectations.
- Satisfaction of expectations or perceived quality is an abstract construct based on the discrepancy between expectations and perceptions.

What the study added to our knowledge

- No validated measurement tool seemed to currently exist, that assessed physiotherapists' perceived quality on physiotherapy PMS.
- The Quality Questionnaire on Physiotherapy Practice Management Software proved to be a reliable and valid questionnaire to assess the perceived quality on physiotherapy PMS.
- The knowledge of the perceived quality on the attributes of a PMS could help physiotherapists when benchmarking software solutions, and software developers to identify the attributes that need to be reinforced.

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