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Development, validation and measurement of patient satisfaction questionnaire in Spanish in drive thru services adapted to hospital pharmacies during COVID-19 pandemic

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ABSTRACT

Background: There are no validation studies on patient satisfaction surveys in Spanish that can evaluate a hospital pharmacy drive-thru service.
Objective: To develop and apply a pharmacy drive-thru satisfaction survey in Spanish during the COVID-19 pandemic with an analysis of the instrument validation.
Methods: This was a qualitative study for developing, validating, and measuring patient satisfaction who used the drive-thru pharmacy during the COVID-19 pandemic. Content validity was obtained by a two-round Delphi and patient interview for apparent validity. The questionnaire was administered to 110 patients. The researchers made an item reduction by inter-item and item-total correlation analysis, stability validation by a test–retest, a test of reliability by Cronbach's alpha, and extraction of factors by an exploratory factorial analysis. Likewise, confirmatory factor analysis was developed to obtain a structural equation model based on generating an instrument of two sub-models of latent factors (service and place) with ten observed variables (items).
Results: A questionnaire was developed that relates six observable variables to the latent factor service and four observable variables to the latent factor place which are ten items based on a Likert scale from 1 to 5, obtaining a Cronbach's alpha = 0.901. The mean population satisfaction score was 4.523. The model presented a Root Mean Square Error of Approximation (RMSEA) of 0.026 (0.000–0.098), and standardized beta values greater than 0.2 according to the confirmatory factor analysis. Therefore, the goodness-of-fit of our model is consistent and the instrument of patient satisfaction with the use of drive-thru has been validated. Patient satisfaction had a mean of 4.9 points.
Conclusions: This study developed and validated a reliable scale that evaluates satisfaction in a hospital pharmacy drive-thru service during COVID-19 pandemic that can be applied in other Spanish speaking countries. A great percentage of the patients that were evaluated had good satisfaction.

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1. Introduction

In December 2019, the city of Wuhan, China, witnessed an outbreak of pneumonia with an unknown etiology. It wasn't until January 9, 2020, that the World Health Organization (WHO) confirmed these cases to be caused by Coronavirus Disease (COVID-19). Data reveals that as of April 16, 2023, the global tally of confirmed cases has surged to 763,740,140, accompanied by 6,908,554 reported deaths. Notably, an impressive count of 13,321,463,740 vaccine doses has been administered (Timeline, 2023). Reflecting on the historical backdrop of past pandemics like SARS-CoV in 2002, H1N1 Influenza in 2009, and Middle East Respiratory Syndrome (MERS) in 2012, among others, none of these instances evoked a response as profound in precautionary measures and concerns as observed with the advent of COVID-19. In other words, the high level of global cooperation has been impeccable to stop as much as possible the spread of the disease, this involved developing various health services in remote modality to avoid face-to-face activities (Personal de Salud – Coronavirus, 2021).

Some examples of remote healthcare services through telemedicine, remote symposiums, telecommuting, medical E-education, among others have been done during COVID-19, (Bokolo, 2021; Contreras et al., 2020; Dieck-Assad et al., 2021; Diri, 2020; Ferrel & Ryan, 2020; Morán-Soto et al., 2022; Wosik et al., 2020; Zhang et al., 2022); consequently, the approach of analyzing other remote healthcare services such as the development of an efficient pharmacy drive-thru service also requires attention. Indeed, drive-thru started in the 90s in pharmacies by Walgreens pharmacy chain in the United States of America and was adapted by different countries (Abu Farha et al., 2017; Abu Hammour et al., 2019; AlAbbasi et al., 2021; Azmi & Hasnah, 2015; Chew et al., 2021; Diri, 2020; Ellis et al., 2023; Hussain et al., 2021; Manhua et al., 2022; Wattana et al., 2022; Zerwekh et al., 2007).

Likewise, a review article evidenced that the communication and interaction of pharmacists between doctors and patients has helped to explain the proper management of medications in drive-thru (Mohamed Ibrahim et al., 2022). In a broader spectrum, another review study has described the management power of authorities, professional associations, owners, and administrators in pharmaceutical practice in their relationship with community centers, clinics, or hospitals during the COVID-19 pandemic for the supply of medicines by remote methods (Ghibu et al., 2021).

However, when it was needed to qualify and review the areas of opportunities and acceptance of the drive-thru as a measure to fight the pandemic, no satisfaction scale in Spanish was found in the literature; due to the aforementioned, this study aimed to develop, validate and apply a pharmacy drive-thru satisfaction survey in Spanish during the COVID-19 pandemic. The aforementioned study took place in a hospital in Northern Mexico that implemented a drive-thru to face the sanitary crisis caused by the COVID-19 pandemic.

2. Method

An observational study for developing, validating, and measuring '*patient satisfaction*' was done in a drive-thru pharmacy in a hospital during the COVID-19 pandemic in a Northern Mexican population by following the standards for educational and psychological testing (Standards for Educational and Psychological Testing, 2014). The study used the COnsolidated criteria for REporting Qualitative research (COREQ) guidelines in qualitative research (Tong et al., 2007). It included adult users of the drive-thru pharmacy at a hospital located in the northern Mexico region from November 2020 to February 2021. The study was conducted per The Code of Ethics of the World Medical Association (WMA – The World Medical Association-WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects, n.d.) for experiments involving humans. Likewise, it was approved by the local Institutional Review Board (Reference number: 18012021-CN-2-CIRef). All participants signed the consent form. The people who conducted this study were made up of medical professionals who were supported by a research methodology expert. Likewise, the interviewers were two female medical doctors (MD), that were in a one-year internship at the hospital and were interested in the quality and patient satisfaction of the drive-thru service. Before applying the survey, both received training in research methodology and had an inter-observer agreement (Cohen's Kappa) of 0.9. The interviewers had no personal relation and did not previously know the patient they interviewed.

The study included a homogenous sample of adult patients of both genders over 18 years of age, who had attended the drive-thru pharmacy service during the COVID-19 pandemic. After patients had a telemedicine or face-to-face medical consultation, the health provider did a drug prescription and sent it to the drive-thru pharmacy through an electronic medical record system. The patients had 72 hrs. to attend to the pharmacy. After that, the patients arrived by personal motor vehicles to provide the pharmacist with their medical ID numbers, and then the pharmacist prepared the boxes with the medication and gave them to the patients. The interviewers applied a validation survey after patients received their medication during the time, they were in the line waiting to exit the pharmacy.

The sample size was established according to Boateng et al. who recommends a rate of 10 patients per item (Boateng et al., 2018). The process of validation had three faces (Fig. 1); thus, the first was item development, the second was scale development, and the last was scale evaluation (Linstone & Turoff, 1975; Profillidis & Botzoris, 2019; Spranger et al., 2022).

2.1. Phase 1: Item development

The first was a qualitative phase, divided into two steps: identifying the study domain and the second was the generation of the items. The study domain was the satisfaction of patients who used the drive-thru pharmacy at the hospital. It was confirmed that there were no validated scales that measured the satisfaction of users of a drive-thru pharmacy. The generation of the items was carried out based on the deductive method.

The second part consisted of validating the scale. It was carried out by employing expert judges, experts in clinical quality, in research, among others, through the Delphi methodology. The previously prepared questionnaire was sent to them to rate the adequacy and relevance of each item using the Likert scale. As it is a qualitative phase, it was possible to add or delete items from the study coordinators to adapt the scale to the correct context. The second method used for content validation was the validation of the items by final users who attended the drive-thru pharmacy service during the COVID-19 pandemic period from November 2020 to February 2020. According to Boateng et al., a sample of 5 to –15 interviews was enough to achieve validity of users' perspectives (Boateng et al., 2018); likewise, it allowed the elimination, addition, and improvement of poorly written items or questions to facilitate their understanding (Linstone & Turoff, 1975; Profillidis & Botzoris, 2019; Spranger et al., 2022).

2.2. Phase 2: Scale development

The second phase was the scale development. Once the content validation had been carried out, the scale was applied to 110 patients. The sample size was calculated using the method previously described, thus achieving a sample size of 110 patients for 11 items (Linstone & Turoff, 1975; Profillidis & Botzoris, 2019; Spranger et al., 2022).

Once the results were obtained and inter-item and item-total correlation analyses were achieved as item reduction tests, the items with low correlation (<0.30) were eliminated. Posteriorly, the stability validation was carried out by Test-retest. Inter-operator stability was analyzed with a consecutive application of the scale by the same evaluator, to the same person, 24 h apart. Then, the inter-operator stability was analyzed by

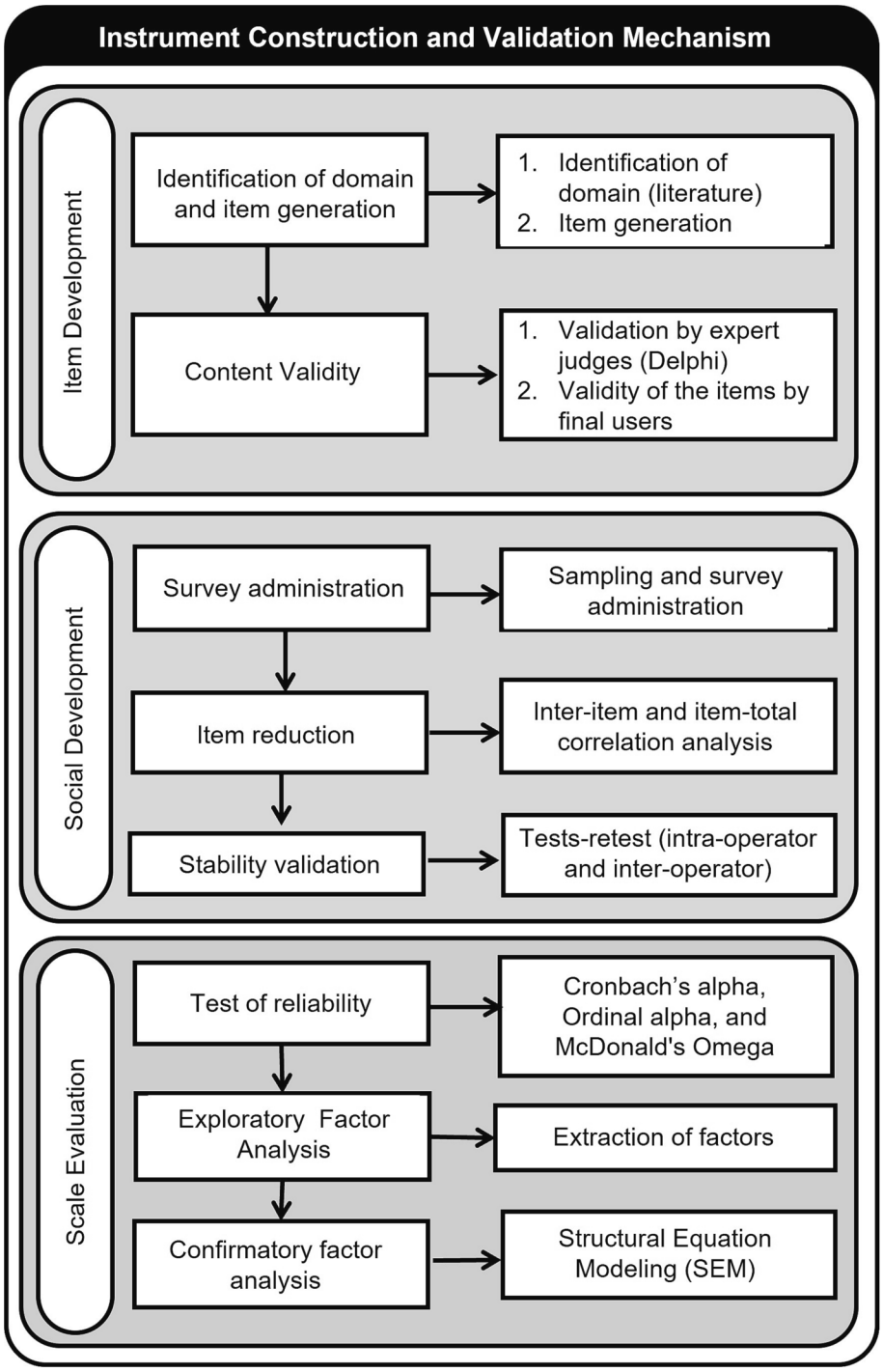

Fig. 1. Instrument development and validation process.

applying the same scale to the same person, by different evaluators.

2.3. Phase 3: Scale evaluation

The third phase consisted of the evaluation of the scale. The reliability calculation was obtained from a variability and standard deviation study using Cronbach's alpha. An alpha coefficient of 0.7 was considered adequate. The second test was used to determine the number of factors or dimensions of the scale, and a factorial analysis was carried out using the KMO tests (Kaiser, Meyer, and Olkin), Bartlett's test of sphericity, and varimax rotation. Other studied variables were gender, COVID-19 background, frequency of use, transportation facility, normal attending time, and illness type. The third test was the confirmatory factor analysis in which it was obtained the structural equation modeling (path diagram) to confirm the validation of the instrument on the study (Confirmatory Factor Analysis for Applied Research – Search Results, 2015). This analysis includes the Ordinal alpha and the McDonald's Omega; in this sense, the ordinal alpha coefficient is used to evaluate the internal consistency of ordinal scales, but it is especially suitable for ordinal or categorical data, its value is between zero and one, thus a value above 0.7 is considered adequate. As for the McDonald's Omega is a measure of reliability that is also used to evaluate the internal consistency of an instrument, in that as a result, it is sought that the McDonald's Omega coefficient is equal to or greater than 0.70.

2.4. Data analysis

Two researchers reviewed the quality control of the database and anonymized it. The normality assumption was evaluated with the Shapiro-Wilk test and frequency histograms. Descriptive statistics, frequencies, means, percentages, and standard deviation were carried out for the clinical and demographic variables. The quantitative phase for the construction and validation of the measurement instrument was obtained through the following statistical tests: item reduction by inter-item and item-total correlation analysis, the ceiling and floor effects were also evaluated. In the context of exploratory factor analysis, Principal Components Analysis (PCA) was employed for factor extraction, and the determination of the number of factors to retain was based on the examination of both the scree plot and the Kaiser-Guttman Criterion, considering eigenvalues. Additionally, the Varimax rotation method was applied to enhance the interpretability of the extracted factors. The cut-off point selected to retain items was over 0.5, based on the guideline by Williams et al. (2010). Analysis of internal reliability of the survey was made using Cronbach's Alpha test and stability validation through a Pearson correlation test (Test-Retest). A value of $p < 0.05$ was considered statistically significant. There was no missing data during the data acquisition and analysis. Finally, to obtain a confirmatory factor analysis, we developed a structural equation model (Brown, 2015); this suggests that the broader framework of general structural equation modeling specifically applied to patient satisfaction, can be deconstructed into two sub-models: a measurement model and a structural model. As per convention, when visually depicting the model, observable variables are encased within rectangles or squares (representing items or questions), while latent variables are encapsulated by ovals or circles. Similarly, residuals consistently are symbolized by ovals or circles.

Furthermore, we employed the Root Mean Square Error of Approximation (RMSEA) to assess the goodness-of-fit of our model. An RMSEA value of <0.9 was considered indicative of an acceptable model fit. Notably, standardized β values exceeding 0.2 were deemed clinically significant within the context of the patient satisfaction survey instrument. In addition, the ordinal alpha for each factor, and the McDonald's Omega calculations were performed to measure the internal consistency of the set of items, as well as to measure the reliability of the instrument on the participant population, respectively. The data analysis was executed using SPSS version 25 software.

3. Results

The first phase (development of the items) was carried out by designing a first-question survey with 21 items based on the Likert scale from 1 to 5 (where 1 equals least satisfaction and 5 equals highest satisfaction). This first survey was sent to 7 experts for item validation following the Delphi method. After two rounds, an elimination process was conducted leaving 11. Five final patient users validated the content of the last questionnaire, where no changes were suggested at this point.

After inviting 200 participants, a total of 110 were persons accepted to answer the survey. The reason why some patients did not participate was concerning not having time to answer the questionnaire. Overall, the participants were mostly men 53.6% (n = 59), with a mean (SD) age of 49.9 (15.7). Many patients who used the drive-thru pharmacy had chronic comorbidities (for example, Type 2 diabetes, hypertension, and dyslipidemia, 81.8%, n = 90), while first-time users or prescribed medication for acute illnesses represented 18.2% (n = 20).

71.8% (n = 79) denied being positive for COVID-19 and 28.2% (n = 31) confirmed having COVID-19 before the survey was applied. Furthermore, 96.4% (n = 106) of the patients had access to a personal vehicle and 3.6% (n = 4) had not (a family or friend brought them to the drive-thru service). The frequency of attendance to the drive-thru pharmacy was also asked, 46.4% (n = 51) of patients attended once every three months, 32.7% (n = 36) once every month, 7.3% (n = 8) once every six months, 4.5% (n = 5) once every 2 weeks, 3.6% (n = 4) once every week, 2.7% (n = 3) less than or once a year, 1.8% (n = 2) once every 2 months and lastly 0.9% (n = 1) once ever.

3.1. Item reduction

Inter-item and item-total correlation tests were performed to eliminate those items that presented a low correlation (≤0.22). At the end of the test one item was eliminated, leaving a total of 10 items. The final matrix correlation ranged from 0.4 to 0.7.

3.2. Stability tests

The test–retest between the same evaluator showed a significant correlation ($r = 0.9$, $p < 0.001$). Similarly, the test–retest between different evaluators had a good correlation ($r = 0.75$, $p < 0.001$).

3.3. Scale evaluation

3.3.1. Exploratory factor analysis

The reliability test was measured with Cronbach's alpha, obtaining 0.89 with 11 items and 0.901 after one item was eliminated, having a final survey of 10 items (Table 1).

Factorial analysis was conducted by the extraction of components, obtaining two factors shown in Table 2. The calculation on the communalities is shown in Table 3. The two latent factors were then rotated using Varimax, under the assumption that factors were not related (Table 4). Posteriorly factors were categorized as "service" and "space". The first factor included overall attention received, the drive-thru implementation, prescription matching the medication received, working hours, personnel amiability, hospital entry avoidance, and hygiene measures; the second factor included place, waiting time, and space. Bartlett's test of sphericity < 0.05 and a Kaiser Meyer Olkin (KMO) measure of 0.854 were obtained. Likewise, the McDonald's Omega value was 0.900, and Ordinal Alpha for the component "service" was 0.9102 and for "space" 0.8125.

3.3.2. Confirmatory factor analysis

The path diagram of the confirmatory factor analysis of the patient satisfaction instrument was clustered into two latent factors (service, and place); in this confirmatory factor analysis, there was a relation between latent factors and the items in which the relation was standardized with the values of standardized beta ® (Fig. 2). The confirmatory factor analysis showed a RMSEA of 0.026 (0.000–0.098), and

Table 1
Final satisfaction questionary after validation by final users.

Consecutive number	Item
Q1	Satisfacción con el área de entrega de medicamentos (limpieza, accesibilidad, ubicación)
Q2	Satisfacción con el horario de atención (horarios amplios y accesibles)
Q3	Satisfacción con el tiempo de espera en fila
Q4	Satisfacción con la amabilidad de parte del personal
Q5	Satisfacción con la modalidad para evitar ingreso a clínica
Q6	Satisfacción con las medidas de higiene del personal (lavado de manos, equipo de protección)
Q7	Satisfacción con el espacio brindado para hacer fila de espera (espacio amplio y seguro)
Q8	Satisfacción con la atención que reciben (rapidez, eficacia)
Q9	Satisfacción con la modalidad drive-thru para recoger medicamento
Q10	Satisfacción con la entrega de medicamentos correctos (medicamento coincida con receta)

n = 110.
Likeret scale: 1 muy insatisfecho, 2 insatisfecho, 3 neutro, 4 satisfecho, 5 muy satisfecho.

Table 2
Factorial analysis by component extraction.

Factor 1 (service)	Factor 2 (place)
Personnel amiability (Q1)	Delivery space (Q7)
Hospital entry avoidance (Q2)	
Hygiene measures (Q3)	Working hours (Q8)
Overall attention (Q4)	Waiting time (Q9)
Drive thru modality (Q5)	
Prescription matching medication received (Q6)	Drive-thru area (Q10)

KMO = 0.854.

Table 3
Communalities.

Items	Initial	Extraction
Personnel amiability (Q1)	1.000	0.743
Hospital entry avoidance (Q2)	1.000	0.576
Hygiene measures (Q3)	1.000	0.636
Overall attention (Q4)	1.000	0.755
Drive thru modality (Q5)	1.000	0.812
Prescription matching medication received (Q6)	1.000	0.528
Delivery space (Q7)	1.000	0.597
Working hours (Q8)	1.000	0.722
Waiting time (Q9)	1.000	0.773
Drive-thru area (Q10)	1.000	0.647

Extraction method through Principal Components Analysis.

Table 4
Rotated Component Matrix.

Items	Component 1	Component 2
Personnel amiability (Q1)	0.200	0.839*
Hospital entry avoidance (Q2)	0.526	0.547*
Hygiene measures (Q3)	0.130	0.787*
Overall attention (Q4)	0.858*	0.139
Drive thru modality (Q5)	0.826*	0.359
Prescription matching medication received (Q6)	0.716*	0.122
Delivery space (Q7)	0.273	0.723*
Working hours (Q8)	0.765*	0.370
Waiting time (Q9)	0.808*	0.347
Drive-thru area (Q10)	0.785*	0.178

The rotation method used was Varimax with Kaiser normalization.
* Item retained in the component.

standardized ® values >0.2 (shown in Fig. 2), as a result, the values indicate a significant relationship between the observed variable and the latent factor. In addition, the CFE additional parameters were: Chi-Square Divided by Degrees of Freedom (CMIN/DF, 2.568), Goodness of Fit Index (GFI, 0.875), Comparative Fit Index (CFI, 0.983), and Tucker-Lewis Index (TLI, 0.875). Moreover, Table 5 shows the results of the confirmatory factor analysis model, in this case, the parameters of the variables obtained reveal a consistent model. In addition, Table 6 shows the correlation results of the CFE model on the drive-thru survey. In which the estimates describe a relationship between them.

3.4. Patient satisfaction evaluation

Regarding the patient satisfaction evaluation, the mean obtained from the Likert scale (from 1 to 5) of the total items was 4.9, as shown in Table 7.

Moreover, the satisfaction median and the interquartile range (RIQ) of the 10 items were in most of them five with an interquartile range of zero as described in Table 3. There were no floor effects, and there was a ceiling effect in 25.5% of the population (Lim et al., 2015).

4. Discussion

This study developed and validated a highly reliable instrument in

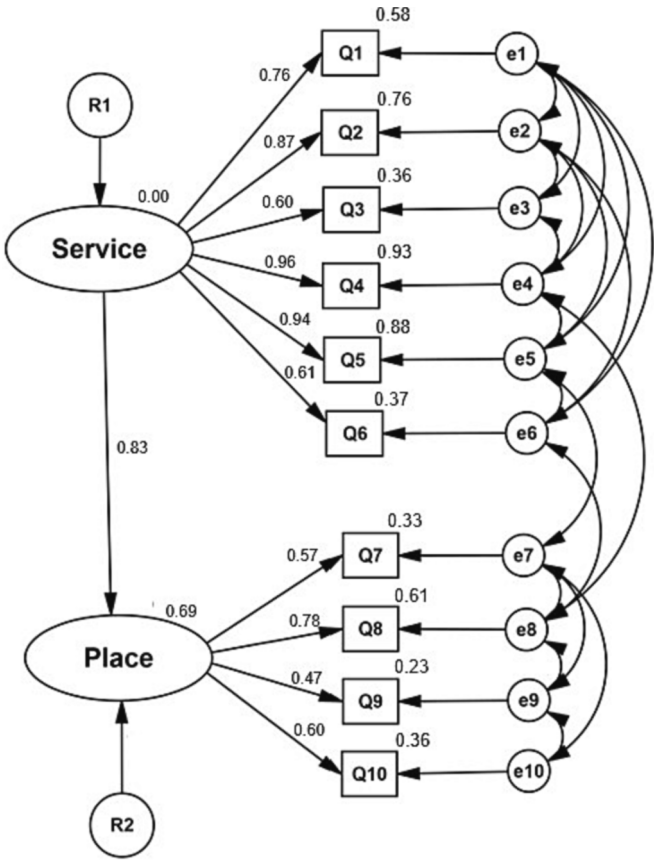

Fig. 2. Path diagram of the CFE model on the drive-thru instrument with two factors. Factor one is 'service' which is composed of six items, these are: personnel amiability (Q1), hospital entry avoidance (Q2), hygiene measures (Q3), overall attention (Q4), drive-thru modality (Q5), and prescription matching medication received (Q6). Factor two is associated with 'place', which is composed of four items, these are: delivery space (Q7), working hours (Q8), waiting time (Q9), and drive-thru area (Q10).

Table 5
Results of the CFE model on the drive-thru survey.

Variable	Estimate	Std. Estimate	Error	p-value
Place ← Service	0.708	0.832	0.159	<0.001
Personnel amiability (Q1) ← Service	1	0.762	–	–
Hospital entry avoidance (Q2) ← Service	1.278	0.873	0.169	<0.001
Hygiene measures (Q3) ← Service	0.803	0.601	0.141	<0.001
Overall attention (Q4) ← Service	1.414	0.962	0.192	<0.001
Drive thru modality (Q5) ← Service	1.489	0.94	0.21	<0.001
Prescription matching medication received (Q6) ← Service	0.771	0.61	0.133	<0.001
Delivery space (Q7) ← Place	1	0.572	–	–
Woirking hours (Q8) ← Place	1.157	0.784	0.194	<0.001
Waiting time (Q9) ← Place	0.979	0.474	0.203	<0.001
Drive-thru area (Q10) ← Place	1.273	0.604	0.244	<0.001

Spanish that evaluates patient satisfaction with hospital drive-thru pharmacy service. This survey can be applicable in other Spanish-speaking countries where this service is implemented. Also, the study showed that patient satisfaction is high, so this type of measure is useful in the pandemic breakout.

Since the 1990s most of the drive-thru services that existed had been applied to pharmacies (Hussain et al., 2021). There are not many hospitals that provide a drive-thru service, and this facility has not been evaluated properly. In Queen Elizabeth Hospital in Malaysia, a drive-

Table 6
Correlations results of the CFE model on the drive-thru survey.

			Estimate
e1	↔	e2	0.102
e2	↔	e3	0.091
e3	↔	e4	0.167
e4	↔	e5	−3.11
e5	↔	e6	0.515
e7	↔	e8	0.335
e8	↔	e9	−0.14
e9	↔	e10	0.289
e1	↔	e3	0.202
e1	↔	e4	−0.071
e1	↔	e5	−0.369
e1	↔	e6	0.343
e7	↔	e9	0.362
e7	↔	e10	0.213
e2	↔	e4	−0.676
e2	↔	e5	0.025
e2	↔	e6	0.418
e6	↔	e8	0.26
e5	↔	e7	−0.16
e4	↔	e8	−0.704

Table 7
Satisfaction results.

Consecutive number	Satisfaction median (RIQ)
Q1	5.0 (0)
Q2	5.0 (0)
Q3	5.0 (0)
Q4	5.0 (0)
Q5	5.0 (0)
Q6	5.0 (0)
Q7	5.0 (1)
Q8	5.0 (0)
Q9	4.0 (2)
Q10	5.0 (1)
Total satisfaction mean	4.9

n = 110.

thru pharmacy was added, before the COVID-19 pandemic, showing a mean satisfaction percentage score of 76.6% with and Cronbach's alpha reliability score of 0.9130 (Liew et al., 2020); thus, If we compare these results with our study, our scale performed similarly since Cronbach's alpha was 0.901 and the patient's satisfaction score was also high. Moreover, due to the ordinal Alpha from the components being 0.9102 and 0.8125 the instrument can be evaluated as acceptable (Domínguez-Lara, 2018); in regards to the McDonald's Omega value of 0.900 it is possible to suggest that the instrument has an excellent internal consistency (Hayes and Coutts, 2020). Regarding the CFA parameters, the CMIN/DF (2.568): A CMIN/DF value between 1 and 5 is considered to indicate a good model fit. Our value is clearly within this range, suggesting that the model is an adequate representation of the data. GFI (0.875): Values close to 1 indicate a good fit. Although a GFI value higher than 0.9 is preferable, our value is acceptable. CFI (0.983): Values above 0.95 are considered indicative of a good fit. Our value is excellent. TLI (0.875): This index is similar to the CFI, and values above 0.95 are ideal. Although our value is somewhat lower, in combination with other positive indices, it may be acceptable.

Before the COVID-19 pandemic outbreak, different perceptions existed concerning drive-thru services. For example, a study in Jordan of 194 pharmacists, revealed a perception of an advantage when serving sick patients, the elderly, disabled people, or women with a child in a car; however, most of the pharmacists considered that it could affect the image of the pharmacy profession and it could make pharmacist feel more like a fast-food worker than a pharmacist (Abu Farha et al., 2017). Another study reported patient care at the drive-thru counseling area may negatively influence the quality of patient care and that standardization of the services may be needed (Odukoya et al., 2014). In addition to these perception studies, there are other studies aimed at breaking down the patients' appreciation of the service, for instance, in Malaysia and Jordan it was found a better awareness in patients to maintain social distance (Azmi & Hasnah, 2015; Abu Farha et al., 2017; Ababneh et al., 2023; Abu Hammour et al., 2019). However, in one study made in Jordan, busy clients find the service highly relevant, but there are concerns about poor communication between pharmacists and patients (Abu Hammour et al., 2019). In the case of Saudi Arabia, the perception of drive-thru was evaluated as helpful to avoid traffic violations due to parking limitations in the locality, as well as this delivery method providing privacy for patients and there was 78% overall satisfaction (Diri, 2020).

Drive-thru studies were also evaluated through the satisfaction view; in the city of Perak in Malaysia, drive-thru was evaluated as a satisfactory service but with areas of opportunity to improve the speed in registering as a customer and in requesting more extended hours for attention (Chew et al., 2021). A study performed in Queen Elizabeth Hospital, Malaysia showed great compliance of 96.3% and a mean satisfaction percentage score of 76.6% (Liew et al., 2020). Moreover, in Thailand, the desires and attitudes about the method of drug administration were evaluated; as a finding, satisfaction was found in some medications but not in others, therefore the result depended on the home delivery provider (Wattana et al., 2022). In another drive-thru study, the adherence or follow-up to medication was evaluated through remote drug administration, where the finding was that due to a lack of habits, patients did not comply with their treatment scheme (Ellis et al., 2023).

Furthermore, governments have participated in two studies regarding remote services to supply medications; for instance, a high-speed clinic based on patients in their cars received basic consultation and medications without an appointment with a rate of care of 622 patients in two hours in Hawaii in the United States of America (Zerwekh et al., 2007). In the case of China, the state of the community pharmaceutical services in Shanghai was evaluated, specifically, the study reflects that the region has problems due to workloads that prevent taking this drive-thru service, and there is little training in clinical knowledge, consequently, there is distrust in pharmacists (Manhua et al., 2022).

In our study, we found a high score in patient' satisfaction, confirming the importance of this service in the community. Since no survey that evaluated the satisfaction of drive-thru services exists in Spanish, a new scale had to be developed and validated to use this instrument and evaluate results. The survey needed to include the greatest amount of information with key questions that could be answered in a minimum of time. In the beginning, a 22-item questionnaire was created to ensure the information needed but taking into consideration the time, among other factors like the difficulty of understanding some questions for the non-medical public, this led to the reduction of some of the questions. The final 10-item questionnaire was structured in an easy-to-read format, also it was made to be answered in <10 min. The users were pleased to know that measures were being taken in the hospital to avoid COVID-19 and other disease propagation.

The results obtained revealed that many of the people who used this service were people with a variety of comorbidities that underwent a visit to the clinic every 3 months. Of the 110 studied patients, a total of 81.8% had chronic comorbidities, and 46.4%, visited the hospital for external medical consultation and the pharmacy every 3 months. This time frame is frequent meaning that the people that attended the hospital are also the ones that are the most susceptible to disease. A meta-analysis study with a total of 1786 COVID-19-infected patients identified that many of the patients had comorbidities like hypertension (15.8%), cardiovascular and cerebrovascular conditions (11.7%), and diabetes (9.4%) (Sanyaolu et al., 2020). Hospital attendance was a concern for many for this same reason and could lead to treatment failure and complications of their illness. There is a possibility that by creating this

preventive measure more patients will feel safer attending the hospital without being exposed. In this study, many patients saw the drive-thru service as an option for avoiding the hospital's entrance with a total satisfaction score of 4.7. To the best of our knowledge, no published literature analyzes these facts to make comparisons.

As a limitation of our study, the scale was applied to patients during the ongoing COVID-19 pandemic, meaning results can vary outside of this context. Another limitation was that the validated scale was only applied in one hospital, but due to the nature of the components of the scale, it could be useful in other hospital settings with a similar medical system. This survey evaluates kindness and general attention during the drive-thru service but does not evaluate patient counseling satisfaction. This item cannot be evaluated because of the medical system where the scale was developed. The pharmacist does not do that function, the medical provider is the one that gives this service during medical appointments.

Likewise, it may be possible to first perform an EFA analysis and then perform a CFA in the same population as long as some points are taken into account. For instance, when the study has factor loadings greater than 0.6, it is feasible to perform EFA and CFA in the same population. In this sense, of our 10 variables observed, 7/10 have factorial loadings greater than 0.6, and the other three have values close to 0.6 (Arrindell and Van der Ende, 1985; MacCallum et al., 1996, 1999); it is also possible when the studies of the instruments involve high costs and/or difficulties in their execution; consequently, they are not feasible to scale them to large populations; this was our case due to the presence of the Covid-19 pandemic that caused us not to be able to consider larger populations. Therefore, due to these restrictions we performed the EFC and CFA in the same population but in itself is a limitation in this study and should be considered account for future studies. Nevertheless, it is relevant to mention that all the statistical parameters addressed by this study provide plausibility in its validation, internal consistency, and reliability, making it a firm first step to continue studying drive-thru services in the future, applying the satisfaction scale in other populations to find areas of opportunity and change in the patient experience.

5. Conclusion

This study developed and validated a reliable scale that evaluates satisfaction in a pharmacy drive-thru service during the COVID-19 pandemic. Due to the characteristics of the items, they can be used in other Spanish-speaking Countries. It shows good consistency between raters, it is easy and fast to apply. When applying the survey in a real-world drive-thru pharmacy it shows high user satisfaction.

Hospitals are places where many vulnerable people attend and although the medical services help us recover from illness, it is also a place of propagation for many diseases. Drive-thru services should be adapted to many hospitals worldwide, and future investigations should be made to examine if the usage of a drive-thru pharmacy helps reduce each hospital's cases of COVID-19 or even incidences of another sickness.

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.

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Ethics statement

This study was carried out with human participants whose protocol was reviewed and approved with an ID reference number 18012021-CN-2-CI by the Research and Ethics Committees respectively of Hospital Clinica Nova, in San Nicolas, Nuevo Leon, Mexico. The patients who agreed to participate in the study signed an informed consent letter.

Author contributions

The author's contribution is presented in the author statement attached file.

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