

Adaptation of communication assessment tool for community pharmacists in medication adherence and minor diseases management

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Abstract

Aim: To develop two versions of the Communication Assessment Tool (CAT) skilled for the setting of community pharmacy and to pilot test it on a selected sample.

Materials: Development of two versions of CAT-tool for community pharmacists. Validity and reliability assessments were required to determine the psychometric properties of developed tool versions. To investigate the construct validity of each adapted tool item, confirmatory factor analysis was performed. Reliability was assessed with the Cronbach's Alpha evaluation, internal validity by submitting tool versions to patients of eleven pharmacies from North, Center, and South of Italy for pilot testing.

Results: Two CAT versions were developed and tested: CAT-Pharm-community Adherence to therapy and Minor Disease Management versions. First to evaluate pharmacist-patient communication following the dispensing of a prescription drug, second a consultation for minor disease management.

Conclusion: Communication tools are useful to implement optimal management of chronic diseases to minimize non-adherence and patients' negative health outcomes.

Keywords

communication assessment tool, community pharmacy, patient empowerment, patient-pharmacist relationship

Introduction

Patient communication is a key strategy for achieving better health outcomes and reducing the failure of physician-prescribed therapies. Information regarding the appropriate medication use together with other

recommendations are an essential part of the pharmacist's profession at the time of prescription dispensing (Kerr et al 2021). Patients' understanding concerning prescribed pharmacological treatment is crucial to ensure a proper adherence to the therapy and/or an adequate management of their minor disease (Náfrádi et al 2017; De Geest et al

2018; Steininger et al 2020; Duffy et al 2021). Clearing up misunderstandings and confusion on this aspect should be a key task for the community pharmacist (Menditto et al 2015; Scala et al 2016; Scala et al 2018). Pharmacist recommendations could be better understood if they are conveyed effectively and appropriately to the patient's specific problem (Ferranti et al 2010; Carter et al 2015).

In this scenario, a psychometrically instrument, the Communication Assessment Tool (CAT), was already developed and validated for patient assessment of physician communication skills by Makoul et al in 2007 (Mercer et al 2008; Makoul et al 2017).

Albeit the community pharmacist play a fundamental role in the prescribing-pharmacist-patient chain, to date, no specific assessment tools to detect the quality of communication between community pharmacist and patient during the dispensing of a prescription drug are available. Indeed, the community pharmacist can greatly contribute to the improvement of the patient's disease management. The pharmacist holds a key role in the relationship with the patient by providing useful information, acting as a facilitator, advising the patient on the use of medications and devices, with the ultimate goal of supporting patients and caregivers in the optimal management of the disease. There is now a worldwide recognition that the role of the community pharmacist should be directed towards the provision of advanced, high value-added services. The community pharmacist is an assurer of pharmaceutical care, which involves the active management of minor diseases, chronic conditions, verifying adherence, and monitoring drug therapies.

In this view, we recently developed a CAT tool skilled for the Pharmacist role: CAT-Pharm (Scala et al 2022). As a result, goals of this study were: i) to develop two versions of a Communication Assessment Tool skilled for the setting of community pharmacy: CAT-Pharm-community Adherence to Therapy version and Minor Disease Management version; ii) to pilot testing a preliminary assessment of the communication between the clinical pharmacist and the patient following the dispensing of a prescription drug (Adherence to Therapy version) or a consultation for the management of a minor disease (Minor Disease Management version).

Materials and methods

A pilot study was carried out in Italy from July to August 2019. Eleven pharmacies from North, Center and South of Italy were involved in the study by convenience sampling. Ethics approval was obtained by the Ethics Committee of Cardarelli Hospital in Naples, Italy (424/2017).

Adaptation of CAT to community pharmacist profession

The study was carried out through two different phases: i) development of two specific versions of the CAT-Pharm-community tool by adapting the original

CAT to the community pharmacy setting; ii) evaluation of psychometric validity and reliability and pilot testing of the tools on a small sample of community pharmacies.

The original Communication Assessment Tool, developed by Makoul et al 2007, specifically focused on the assessment of the physicians interprofessional skills. This questionnaire was already adapted to the pharmacist role by developing a pharmacist-patients skilled tool, the CAT-Pharm. The new CAT-Pharm tool passed validity and reliability tests and was translated into Italian (Scala et al 2022). In this study, this CAT-Pharm tool was adapted specifically to the community pharmacy setting by developing the so-called CAT-Pharm-community in two different versions according to the two macro-activities covered by the community pharmacist role:

- CAT-Pharm-community – Adherence to Therapy version: This tool should be used to assess patient perceptions of the pharmacist's communication skills following the dispensing of a physician-prescribed medication.
- CAT-Pharm-community – Minor Disease Management version: This tool should be used to assess patient perceptions of the pharmacist's communication skills following a consultation with the pharmacist for management of a minor disorder.

The design of the two CAT-Pharm-community versions was achieved through the following steps:

Step one: CAT-Pharm evaluation was performed by a working group composed of clinical pharmacists, hospital pharmacists, clinicians and researchers which indicated any items to be eliminated, modified or added;

Step two: Consensus meeting and drafting of a first CAT-Pharm-community for both versions by slightly modifying the items to be more focused on both adherence to therapy and minor disease management versions;

Step three: Cognitive debriefing on a sample of 6 patients to assess comprehensibility of the items of both versions. Respondents were asked to explain what is asked in each question, the meaning of each question, and to repeat the question in their own words. Respondents were also asked to explain the reason for their answer;

Step four: Final consensus meeting was done among by working group of the first stage and consisted in analysis and discussion of cognitive debriefing results and drafting of the final version of both CAT-Pharm-community versions.

Setting, participants and eligible criteria

The second part of the study consisted of internal validation and psychometric characterization of the two CAT-Pharm-community versions by pilot testing it on a selected sample. Eleven Italian community pharmacies participated in the pilot study, five from the North, two from the Center, and four from the South. Sample included in the pilot study consisted of both urban and

rural community pharmacies on the Italian soil. Each pharmacy was asked to recruit approximately twelve patients to be surveyed based on the type of service provided to the patient: The Minor disease management version tool was proposed in the case of dispensing a medication after a consultation with the patient manifesting a minor disorder (~six patients per-pharmacy); while, the Adherence to therapy version tool was proposed in the case of dispensing a medication to treat a chronic condition, following a doctor's prescription (~six patients per-pharmacy).

Pilot study population consisted of patients aged 18 years or older visited the community pharmacies involved (inclusion criteria). Patients with cognitive impairment or receiving antipsychotics and foreign patients who did not understand the Italian language were not included in the study (exclusion criteria).

Tools used for the study and submitted to the volunteer patients were:

- CAT-Pharm-community TEST (Suppl. material 1): Original questionnaire in both developed versions adherence to therapy and minor disease management, structured in a 5 point Likert scale (poor; fair; good; very good; excellent).
- CAT-Pharm-community QUEST (Suppl. material 2): Two questionnaires with the same items of the two versions developed to require an evaluation of the importance of each specific item, structured in a rating grade (very important; important; slightly important; not important).

Moreover, a specific questionnaire was also directed to pharmacist requiring personal and demographic information, named as Pharmacist profiling questionnaire (Suppl. material 3):

Patients enrollment process followed a systematic approach. The person responsible for inviting the patient to complete the CAT-Pharm-community was different from the pharmacist who dispensed the medications for which the patient expresses perceptions about communication/relational skills. This served to eliminate background bias as the patient could be conditioned in providing their opinion. Patients were informed of the study purpose and signed an Informed Consent. Moreover, they were asked to give an evaluation of their communication with the pharmacist, adding suggestions for any unclear or incomprehensible questions. After acceptance to participate, patients received the CAT-Pharm specific version based on their counselling with the pharmacist. Patients who had a consultation for a minor disease received the Minor Disease Management version, while those who asking for a dispensation of a prescription drug received the Adherence to Therapy version. After completion of one of the CAT-Pharm-community versions, the patient was also asked to complete a second questionnaire (QUEST) to assess the importance of the CAT-Pharm items.

Finally, the pharmacist who performed the consultation with the patient completed the pharmacist profiling questionnaire attaching it to the patient's file.

Statistical analysis

Validity (internal, external, and construct validity) and reliability assessments were required to determine the psychometric properties of the developed CAT-Pharm-community tool in both versions. Confirmatory factor analysis was performed to investigate construct validity of each item of the community pharmacist-adapted CAT tool. Sample adequacy was measured by Kaiser-Meyer-Olkin (KMO) and Bartlett's sphericity test. To confirm factor structure, a Oblimin direct rotation with Kaiser normalization was performed. Correlations between items were assessed using the Pearson's correlation test. The Chi-square test was used to compare the proportion of patients who rated a given item 'Excellent' between the two settings. A p-value < 0.05 was considered statistically significant. As both questionnaire versions' responses were structured in a 5 point Likert scale (poor; fair; good; very good; excellent), Cronbach's alpha was performed to assess internal consistency for the translated CAT overall score. As in the original scale development, psychometric analysis indicated that 'Excellent' maps onto 'Yes', and all the other response options (i.e. poor; fair; good; very good) map onto "No" (Makoul et al 2007). Accordingly, and consistent with previous CAT tool uses, results were presented as the percentage of participants who provided ratings of 'Excellent'. Percentage of 'Excellent' responses was calculated from the total number of respondents to the individual question. Analyses were performed using SPSS Statistics for Windows, version 17.1 (SPSS Inc. Released 2008. Chicago, IL; USA).

Results

Both CAT-Pharm-community versions consisted of 16 items and explored several areas of communication at the time of drug dispensing. For each of the 16 items, the patient completing the test could assign a score from 1 (poor) to 5 (excellent).

Regarding the **CAT Pharm-community Test - Adherence to Therapy version**, items' construct validity was assessed. Pearson's correlation test showed significant positive correlations between CAT-Pharm items. The correlation coefficients ranged from -0.142 to 0.797 (Suppl. material 4: 1). The results of the Bartlett's test of sphericity showed a KMO of 0.818 and $\chi^2 = 583.141$ (df = 120, p < 0.01), indicating that the correlation matrix was suitable for factor analysis. A four-factor solution was found identifying four questionnaires macro-areas (Suppl. material 4: 2). Factors 1 (items 1–5) was focused on the understanding of patient clinical needs; Factor 2 (items 6–10) was focused on communication about therapy to the patient; Factor 3 (items 11–13) was focused on the evaluation of patient understanding; Factor 4 (items 14–16) was focused on the building of a trust relation between pharmacist and patient. Results of confirmatory factor analysis are showed in the Suppl. material 4. Moreover, reliability results indicated

very high overall scale reliability for the 16 items of the Adherence to therapy version (Cronbach's Alpha = 0.88).

To assess the tool's internal validity, the CAT Pharm-community Adherence to Therapy version was tested on 67 patients, 70% of these were women. Overall, mean age recorded was 59 years (standard deviation: ± 14.9). Characteristics of these patients is showed in Table

Table 1. Demographic characteristic of patients completing CAT- Pharm- community Test.

| Demographic information | Adherence to Therapy version | Minor Diseases version |
|--|---------------------------------|---------------------------|
| | N = 67 (%) | N = 65 (%) |
| Gender | | |
| Male | 20 (29.9%) | 17 (26%) |
| Female | 47 (70.1%) | 48 (73.8%) |
| Age | | |
| Mean (\pm SD) | 58.6 (± 14.9) | 57.5 (± 13.9) |
| Educational level | | |
| Primary school graduation | 31 (46.3%) | 7 (10.8%) |
| Secondary school graduation | 14 (20.9%) | 15 (23.1%) |
| High school graduation | 9 (13.4%) | 28 (43.1%) |
| Degree graduatin | 13 (19.4%) | 15 (23.1%) |
| Occupation | | |
| Unemployed | 2 (3.0%) | 1 (1.54%) |
| Housewife | 7 (10.4%) | 7 (10.8%) |
| Retired | 23 (34.3%) | 20 (30.8%) |
| Employed | 30 (44.8%) | 32 (49.3%) |
| Student | 1 (1.5%) | 1 (1.54%) |
| Other | 4 (6.0%) | 4 (6.2%) |
| Marital Status | | |
| Single | 15 (22.4%) | 13 (20.0%) |
| Married | 41 (61.2%) | 40 (61.5%) |
| Widower | 6 (9.0%) | 7 (10.8%) |
| Divorced | 5 (7.5%) | 5 (7.7%) |
| Had the patient seen the pharmacist before? | | |
| No | 1 (1.5%) | - |
| Yes, but only one | 5 (7.5%) | 1 (1.54%) |
| Yes more than once | 61 (91.0%) | 64 (98.5%) |

Abbreviations: SD, Standard Deviation.

Table 2. Percentage of excellent ratings for individual CAT-Pharm-community items (Adherence to Therapy version).

| CAT-Pharm-community TEST Adherence to Therapy version | Rating (%) Excellent) N = 67 | |
|--|---------------------------------|------|
| | N | % |
| 1. Greeted me in a way that made me feel comfortable | 57 | 85.1 |
| 2. Treated me with respect | 62 | 92.5 |
| 3. Understood my main health concerns | 46 | 68.7 |
| 4. Let me talk without interruptions | 46 | 68.7 |
| 5. Showed interest in my ideas about the prescribed therapy | 40 | 59.7 |
| 6. Explained how to correctly follow the prescribed therapy | 54 | 80.6 |
| 7. Asked about my ability to follow the prescribed therapy | 47 | 70.1 |
| 8. Discussed how to manage any side effect of the prescribed therapy | 34 | 50.7 |
| 9. Discussed possible interactions of the prescribed therapy with other drugs or foods | 35 | 52.2 |
| 10. Gave me as much information as I wanted | 50 | 74.6 |
| 11. Talked in terms I could understand | 54 | 80.6 |
| 12. Checked to be sure I understood everything | 52 | 77.6 |
| 13. Encouraged me to ask questions | 31 | 46.3 |
| 14. Discussed next steps, including any follow-up plans | 28 | 41.8 |
| 15. Spent the right amount of time with me | 52 | 77.6 |
| 16. Respected my privacy | 52 | 77.6 |

1. Overall, Majority of patients considered as excellent the respectful attitude of the pharmacist (92%, item 2) and the pharmacist's welcome (85%, item 1). A minor percentage of patients (42%) considered excellent the manner in which the pharmacist discussed future interventions, including any examinations and follow-up visits. (item 14) (Table 2). In addition, approximately 80% of patients considered as very important the attitude and communication methods adopted by the pharmacist, whereas 20.9% didn't find very useful the information received about future interventions such as examinations and follow-up visits (Table 3).

Table 3. Patients reporting importance of the CAT-Pharm-community items to asses adherence to therapy.

| CAT-Pharm-community QUEST Adherence to Therapy version | Very important | | Important | | Not very important/ Important | |
|--|-------------------|------|-----------|------|-------------------------------------|------|
| | N | % | N | % | N | % |
| 1. Greeted me in a way that made me feel comfortable | 55 | 82.1 | 11 | 16.4 | 1 | 1.5 |
| 2. Treated me with respect | 53 | 79.1 | 13 | 19.4 | 1 | 1.5 |
| 3. Understood my main health concerns | 50 | 74.6 | 15 | 22.4 | 2 | 3.0 |
| 4. Let me talk without interruptions | 41 | 61.2 | 24 | 35.8 | 2 | 3.0 |
| 5. Showed interest in my ideas about the prescribed therapy | 42 | 62.7 | 20 | 29.9 | 4 | 6.0 |
| 6. Explained how to correctly follow the prescribed therapy | 51 | 76.1 | 15 | 22.4 | 1 | 1.5 |
| 7. Asked about my ability to follow the prescribed therapy | 47 | 70.1 | 18 | 26.9 | 2 | 3.0 |
| 8. Discussed how to manage any side effect of the prescribed therapy | 38 | 56.7 | 19 | 28.4 | 10 | 14.9 |
| 9. Discussed possible interactions of the prescribed therapy with other drugs or foods | 41 | 61.2 | 19 | 28.4 | 7 | 10.4 |
| 10. Gave me as much information as I wanted | 54 | 80.6 | 12 | 17.9 | 1 | 1.5 |
| 11. Talked in terms I could understand | 55 | 82.1 | 12 | 17.9 | - | - |
| 12. Checked to be sure I understood everything | 54 | 80.6 | 12 | 17.9 | 1 | 1.5 |
| 13. Encouraged me to ask questions | 34 | 50.7 | 25 | 37.3 | 8 | 11.9 |
| 14. Discussed next steps, including any follow-up plans | 27 | 40.3 | 26 | 38.8 | 14 | 20.9 |
| 15. Spent the right amount of time with me | 46 | 68.7 | 21 | 31.3 | - | - |
| 16. Respected my privacy | 45 | 67.2 | 21 | 31.3 | 1 | 1.5 |

Regarding the CAT Pharm-community Test - Minor Diseases Management version, item's construct validity was assessed. Pearson's correlation test showed significant positive correlations between CAT-Pharm items. The correlation coefficients ranged from 0.115 to 0.761 (Suppl. material 4: 3). The results of the Bartlett's test of sphericity recorded a KMO of 0.750 and $\chi^2 = 581.129$ ($df = 120$, $p < 0.01$), indicating that the correlation matrix was suitable for factor analysis. A four-factor solution was found in this tool's version identifying the same four macro-areas (Suppl. material 4: 4 and 5). Moreover, reliability results indicated very high overall scale reliability for the 16 items of the Adherence to therapy version (Cronbach's Alpha = 0.87).

To assess the tool's internal validity, the CAT Pharm-community Minor Diseases Management version was tested in 65 patients, of which 73.8% were women. Overall, mean age was 57.5 years (standard deviation: ± 13.9) (Table 1).

Majority of patients (93.8%) rated as excellent the pharmacist's respectful attitude (item 2), and 90.8% of patients also considered excellent the pharmacist's welcome (item 1). Only 47.7% of patients adequately received encouragement from the pharmacist to ask questions (item 13) (Table 4). In addition, about 80% of patients rated very important the communication attitude adopted by the pharmacist, while 15% consider not very useful to receive information

about possible interactions of the prescribed therapy with other drugs and foods (Table 5).

Discussion

Ineffective communication between health professionals and patients is recognized to be one of the main causes of medical errors and damage to patients' health. To overcome this gap, implementation strategies for better communication in healthcare have been investigated for more than a decade (Haley et al 2021,). In this scenario, the main strength of this study lies in the introduction of two specific tools that patients can use to assess communication with community pharmacists in relation to prescribed medication. The two CAT-Pharm-community tools available in Italian language, have proven their potential to be implemented in all community pharmacies. The two tools, compared to the original Italian CAT (Scala et al 2016) and CAT-Pharm (Scala et al 2022), are more specific for the patients' needs. Indeed, the Adherence to Therapy version is exclusively aimed at investigating the level of communication between the community pharmacist and the patient with a specific treatment plan to be followed, while, the Minor Disease Management version investigates the level of communication with the patient following counselling for the management of a minor disease. Several differences can be detected in the two versions, especially in 3 items: "Showed interest in my ideas about the prescribed therapy" for the Adherence to therapy version instead "Asked if I had consulted the doctor about this problem or taken some medication before the consultation" for the Minor Disease Management version; the same for the item "Explained how to correctly follow the prescribed therapy" instead "Gave me right therapy and advice for my problem" and for "Asked about my ability to follow the prescribed therapy" instead "Explained how to correctly follow the prescribed therapy".

The results of the present study prove that, regardless of the type of consultation required by the patient, information regarding a treatment plan to be followed or a minor disease to manage, the most important aspect for the patient seems to be the confidentiality assured by the pharmacist. To prove it, items considered most important in a patient perspective were: "Greeted me in a way that made me feel comfortable", "Treated me with respect" and "Understood my main health concerns". These same items were also rated as excellent in both CAT-Pharm-community versions, hence, generally the patients seem satisfied from the interaction with the community pharmacist. This may be explained by the circumstance that the majority of patients who received the Adherence to Therapy and Minor Disease Management versions (91% and 98%, respectively) had had a consultation with the community pharmacist more than once.

Notably, in the Adherence to therapy version, less than half of patients rated excellent the item "Discussed next steps, including any follow-up plans". Therefore, in the Italian context, enhancing the pharmacist's role as a driver of proper medication adherence seems to be a key aspect.

Table 4. Percentage of excellent ratings for individual CAT-Pharm-community items (Minor disease Management version).

| CAT-Pharm-community TEST <i>Minor disease Management version</i> | Rating (% Excellent) N = 67 | |
|--|-----------------------------|-------|
| | N | % |
| 1. Greeted me in a way that made me feel comfortable | 59 | 90.8% |
| 2. Treated me with respect | 61 | 93.8% |
| 3. Understood my main health concerns | 48 | 73.8% |
| 4. Let me talk without interruptions | 44 | 67.7% |
| 5. Asked if I had consulted the doctor about this problem or taken some medication before the consultation | 44 | 67.7% |
| 6. Gave me right therapy and advice for my problem | 55 | 84.6% |
| 7. Explained how to correctly follow the prescribed therapy | 47 | 72.3% |
| 8. Discussed how to manage any side effect of the prescribed therapy | 32 | 49.2% |
| 9. Discussed possible interactions of the prescribed therapy with other drugs or foods | 36 | 55.4% |
| 10. Gave me as much information as I wanted | 51 | 78.5% |
| 11. Talked in terms I could understand | 52 | 80.0% |
| 12. Checked to be sure I understood everything | 48 | 73.8% |
| 13. Encouraged me to ask questions | 31 | 47.7% |
| 14. Discussed next steps, including any follow-up plans | 42 | 64.6% |
| 15. Spent the right amount of time with me | 48 | 73.8% |
| 16. Respected my privacy | 54 | 83.1% |

Table 5. Patient reporting importance of the CAT-Pharm-community items to assess the management of minor diseases.

| CAT-Pharm-community QUEST <i>Minor disease Management version</i> | Very important | | Important | | Not very important/Important | |
|--|----------------|------|-----------|------|------------------------------|------|
| | N | % | N | % | N | % |
| 1. Greeted me in a way that made me feel comfortable | 50 | 76.9 | 14 | 21.5 | 1 | 1.5 |
| 2. Treated me with respect | 53 | 81.5 | 11 | 16.9 | 1 | 1.5 |
| 3. Understood my main health concerns | 51 | 78.5 | 14 | 21.5 | - | - |
| 4. Let me talk without interruptions | 36 | 55.4 | 28 | 43.1 | 1 | 1.5 |
| 5. Asked if I had consulted the doctor about this problem or taken some medication before the consultation | 44 | 67.7 | 20 | 30.8 | 1 | 1.5 |
| 6. Gave me right therapy and advice for my problem | 49 | 75.4 | 16 | 24.6 | - | - |
| 7. Explained how to correctly follow the prescribed therapy | 50 | 76.9 | 15 | 23.1 | - | - |
| 8. Discussed how to manage any side effect of the prescribed therapy | 37 | 56.9 | 18 | 27.7 | 10 | 15.4 |
| 9. Discussed possible interactions of the prescribed therapy with other drugs or foods | 40 | 61.5 | 17 | 26.2 | 8 | 12.3 |
| 10. Gave me as much information as I wanted | 48 | 73.8 | 15 | 23.1 | 2 | 3.1 |
| 11. Talked in terms I could understand | 49 | 75.4 | 16 | 24.6 | - | - |
| 12. Checked to be sure I understood everything | 47 | 72.3 | 17 | 26.2 | 1 | 1.5 |
| 13. Encouraged me to ask questions | 32 | 49.2 | 27 | 41.5 | 6 | 9.2 |
| 14. Discussed next steps, including any follow-up plans | 39 | 60.0 | 22 | 33.8 | 4 | 6.2 |
| 15. Spent the right amount of time with me | 45 | 69.2 | 20 | 30.8 | - | - |
| 16. Respected my privacy | 47 | 72.3 | 16 | 24.6 | 2 | 3.1 |

The pharmacist is a pivotal figure in the prescriber-pharmacist-patient chain to ensure adherence to the prescribed treatment and the achievement of favorable health outcomes. In this sense, several recent studies have investigated and confirmed the positive impact of the pharmacist services on patient medication adherence (Bunchuailua et al 2021; Bruggmann et al 2021; Gautier et al 2021).

This role is crucial to encourage adherence to a specific prescribed treatment plan, but also, as demonstrated by the use of the Minor Disease Management version tool, to improve clinical outcomes and promote health status of patients following a minor disease consultation. Corroborating to our evidences, a recent systematic review underlined the role of the clinical pharmacist services in improving patient outcomes and medication therapy management. Clinical pharmacist interventions showed a positive impact on therapeutic, humanistic, and safety outcomes (Ahmed et al 2021).

Another recent systematic review (Falch and Alves 2021) investigated on impact of pharmacists as health professionals with the opportunity to act on medication regimen complexity reduction, particularly for older patients. Moreover, results of this review confirmed that pharmacists' active role in this sense has not been studied in depth so far.

Finally, our results indicated that patients need to be actively involved in decisions about their care, regardless of the type of minor or major health problem. This is also confirmed by the finding that few patients felt encouraged to ask questions (item 13) and this issue was also previously revealed by the pilot study conducted for the development and validation of the CAT-Pharm. The pharmacist-patient relationship seems to be crucial to obtain information from the patient about their needs, their ability to follow the prescribed treatment, and to support them so that they understand their minor disorder or the prescribed treatment plan (Osuna et al 2018; Ilardo and Speciale 2020).

Limitations

The present study have several limitations. First, a limitation is strictly related to the nature of the internal validity assessment where the questionnaire measured communication with the pharmacist and sought the

response of participants using the service to comment on the service received. Second, the small sample size should be considered; however, this is a pilot study with the aim of developing and translating an ad hoc instrument for assessing community pharmacist-patient communication in two different situation of the consultation and evaluating the reliability and construct and internal validity of the tool. Although the study did not cover the assessment of external validity, the next step will certainly be to carry out the study on a larger and more heterogeneous sample for external validity analyses and to ensure the generalizability of the communication tool in both versions.

Conclusions

Communication Assessment Tool (CAT) adapted to the community pharmacy setting (CAT-Pharm-community) could be a useful aid for the pharmacist in evaluating the patient's perception of the approach to the problem they reported. Feedback obtained from the questionnaire may be useful in taking corrective action to improve the quality of pharmacy service during counseling for management of a minor disorder. Moreover, the communication tool could be useful for the implementation of an optimal management of chronic diseases to minimize non-adherence treatment and consequently patient's negative health outcomes.

Conflict of Interest

The author(s) declare that there are no conflicts of interest.

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Supplementary material 1

CAT-Pharm-community TEST

Authors: Corrado Giua, Sara Mucherino, Nicolina Floris, Enrico Keber, Gregory Makoul, Daniela Scala, Valentina Orlando, Enrica Menditto

Data type: Docx file.

Explanation note: Original italian questionnaire in both developed versions adherence to therapy and minor disease management, structured with a 5 point Likert scale (poor, fair, good, very good, excellent).

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Link: <https://doi.org/10.3897/pharmacia.69.e80742.suppl1>

Supplementary material 2

CAT-Pharm-community QUEST

Authors: Corrado Giua, Sara Mucherino, Nicolina Floris, Enrico Keber, Gregory Makoul, Daniela Scala, Valentina Orlando, Enrica Menditto

Data type: Docx file.

Explanation note: Original italian two questionnaires with the same items of the two versions developed to require an evaluation of the importance of each specific item, structured with a rating grade (very important, important, slightly important, not important).

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Link: <https://doi.org/10.3897/pharmacia.69.e80742.suppl2>

Supplementary material 3

Pharmacist profiling questionnaire

Authors: Corrado Giua, Sara Mucherino, Nicolina Floris, Enrico Keber, Gregory Makoul, Daniela Scala, Valentina Orlando, Enrica Menditto

Data type: Docx file.

Explanation note: Original italian questionnaire only directed to pharmacist requiring personal and demographic information.

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Link: <https://doi.org/10.3897/pharmacia.69.e80742.suppl3>

Supplementary material 4

Confirmatory factor analysis

Authors: Corrado Giua, Sara Mucherino, Nicolina Floris, Enrico Keber, Gregory Makoul, Daniela Scala, Valentina Orlando, Enrica Menditto

Data type: Docx file.

Explanation note: Results of confirmatory factor analysis.

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