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REVIEW ARTICLE

Measurement of patient satisfaction with community pharmacy services: a review

Pradnya Naik Panvelkar · Bandana Saini · Carol Armour

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Abstract *Aim of the review* The aim of this review is to conduct an in-depth analysis of the available literature in order to identify and evaluate studies measuring patient satisfaction with pharmacy services delivered by pharmacists in a community setting. *Method* An extensive literature search was conducted in five databases (Medline, Scopus, Embase, Psychinfo, International Pharmaceutical Abstracts) using the search terms "patient/client/consumer satisfaction" AND "community pharmacy/pharmacies" AND "pharmacy service/pharmaceutical services/pharmacy program/intervention/intervention studies". Only those articles where the main focus was measuring patient satisfaction with services delivered in community pharmacies were included in the review. Patient satisfaction was explored with three different levels of pharmacy services—general services, intervention services and cognitive services. *Results* Twenty-four articles measuring patient satisfaction with community pharmacy services were retrieved. Of these, eleven measured patient satisfaction with general services, six measured satisfaction with intervention services and seven measured satisfaction with cognitive services. The majority of studies reviewed had adopted and measured satisfaction as a multidimensional construct. None of the studies reviewed tested any theoretical models of satisfaction. Further a lack of consistent instruments measuring patient satisfaction was observed, with most of the reviewed studies using self developed, non-validated or ad hoc instruments with items from various previously published papers. The review also observed high levels of patient satisfaction with pharmacy services be they general, intervention or cognitive services. *Conclusion* This review found that patient satisfaction has been measured within the community pharmacy context to a certain degree. Further research is needed to develop and test instruments based on theoretical frameworks, to test satisfaction pre and post hoc and in well designed randomized controlled trials and to measure changes in satisfaction over time. Novel approaches involving an understanding of expectations and preferences of patients and matching these to the services provided also need to be explored.

Keywords Cognitive service · Community pharmacy · Patient satisfaction · Pharmacy service

P. Naik Panvelkar (✉) · B. Saini · C. Armour
University of Sydney, Sydney, NSW, Australia
e-mail: pradnya@pharm.usyd.edu.au

Impact of findings on practice

- There is a lack of patient satisfaction research based on sound theoretical frameworks within the community pharmacy context.
- Most studies use ad hoc instruments to measure patient satisfaction in community pharmacy research, and there seems to be a lack of well designed, tested and consistent instruments.
- Novel, alternative approaches to measure satisfaction could be based on an understanding of expectations and preferences of patients and matching these to the services provided.

Introduction

Over the last two decades, the role of the pharmacist has changed. From merely the dispensing of drugs, pharmacists are now involved in provision of pharmaceutical care [1]

and specialised cognitive services. These specialised service models incorporate the idea of trained pharmacists providing pharmaceutical care or disease management through patient assessment, objective/subjective disease parameter testing, ongoing follow ups and collaboration with other health care providers. In the last decade, a plethora of innovative pharmacy-based services have been developed and tested and have demonstrated positive health outcomes in a variety of clinical areas including asthma, diabetes, cardiovascular disease and osteoporosis [2–5]. Concurrently, Australian pharmacy practice has also evolved, and complex, advanced community pharmacy-based services models, demonstrating positive health outcomes, have now been developed and tested [6–8].

Clearly there is need for evaluating these 'novel' service delivery models. Humanistic outcomes are now included in all evaluative efforts as they depict the value of a pharmaceutical service beyond the traditional clinical-based outcomes and are patient rather than provider centred [9].

Patient satisfaction, a frequently reported humanistic outcome, serves as an important determinant of the viability and sustainability of health care services [10]. It can lead to more effective utilisation of health care resources. There is evidence to show that satisfied patients are more likely to continue using health care services, value and maintain relationships with health care providers, adhere to treatment and have better health outcomes [11–14]. Patient satisfaction is an important indicator of the quality of service delivered and is vital for continuous monitoring and quality improvement in health care delivery systems [15]. Further, patient evaluations may help in identifying patient needs, perceptions, concerns and areas of service failure and may encourage health care providers to be accountable for the quality of service delivered [15].

There has been a substantial increase in the attention paid to measuring patient satisfaction with health care. A MEDLINE search for the term "patient satisfaction" cited about *153* articles when limited to articles up to 1980, *847* articles up to 1990, increasing to *17,088* by 2000 and further to *42,107* by mid-2008.

Although patient satisfaction is such a widely investigated construct, there is still a lack of a universally accepted definition and theory of patient satisfaction. Theoretical frameworks, borrowed from varied disciplines, have laid the foundations for understanding the abstracted nature of a concept such as patient satisfaction [16–26] (Fig. 1). Historically, researchers such as Donabedian [27] initially recommended measuring "patient satisfaction" as an outcome of care. This notion was extended further by subsequent researchers such as Ware et al. [25], who conceptualised patient satisfaction to be a multi-dimensional construct and defined it as "an individual's evaluation of distinct dimensions of the health care." Ware et al. [25] also developed the Patient Satisfaction Questionnaire (PSQ), which to date remains one of the most widely used instruments to measure patient satisfaction in health care. Linder-Pelz [22] used several social-psychological and social-science theories such as Fishbein and Azjen's attitude theories [16], job and pay satisfaction theories [17, 18], relative deprivation theory [20, 21] and Festinger's social comparison process [19] to identify five social-psychological determinants of patient satisfaction: value, occurrences, expectations, interpersonal comparisons, entitlement.

Schommer and Kucukarslan [14] were responsible for much of the early work on conceptualising patient satisfaction within the pharmaceutical services context. After reviewing the literature, they classified pharmaceutical services based on four conceptualizations of patient satisfaction: performance evaluation (patient assessment of service aspects), disconfirmation of expectations (gap between expectation and actual experience), affect-based assessment (emotional response to service) and equity-based assessment (perception of fairness) [14]. As outlined in Fig. 1, these pharmacy referenced conceptualisations of patient satisfaction are aligned with most of the previously proposed theories on patient satisfaction.

As community pharmacy-based services evolve in complexity and become an increasingly vital part of the health care system globally, identifying patient satisfaction with such pharmacy-based services becomes imperative for the purposes of their successful implementation, long-term viability, quality management and for identifying areas for improvement.

Aim of review

The aim of this review is to conduct an in-depth analysis of the available literature in order to identify and evaluate studies measuring patient satisfaction with pharmacy services delivered by pharmacists in a community setting.

Methods

An extensive search of the literature was conducted to identify publications focusing on patient satisfaction with community based pharmacy services. The search was conducted using the keywords "patient satisfaction" or "client satisfaction" or "consumer satisfaction" AND "community pharmacy" or "pharmacies" AND "pharmacy service" or "pharmaceutical services" or "pharmacy program" or "intervention" or "intervention studies". The following databases were searched until July 2008: Medline, Embase, International Pharmaceutical Abstracts (IPA), Psychinfo and SCOPUS. Articles were limited to

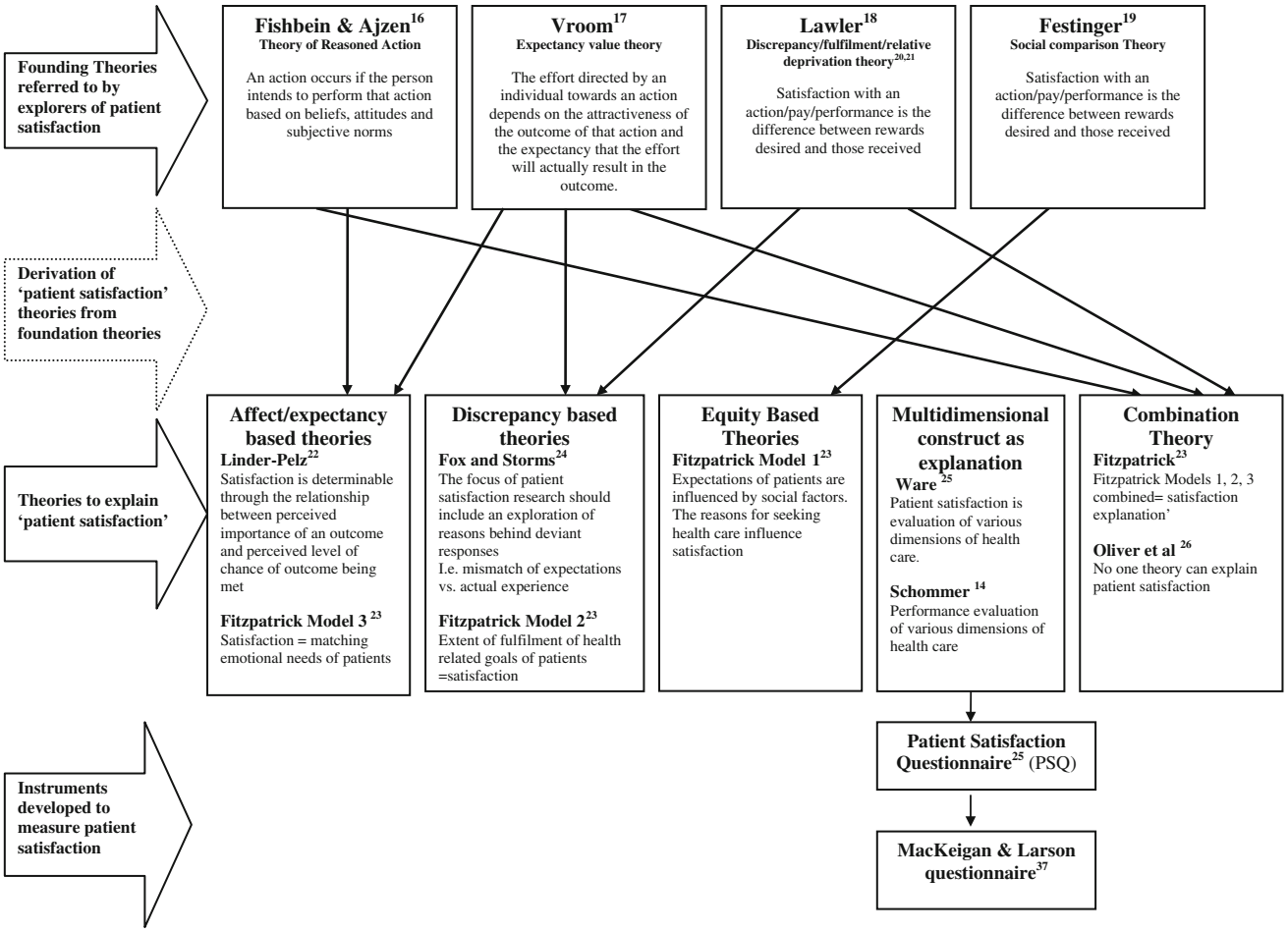

Fig. 1 Theoretical framework of patient satisfaction

English language. Abstracts of articles were first scanned and only articles meeting the inclusion criteria were downloaded/obtained.

Terminology of satisfaction within pharmacy services used in this review

General services

If articles reviewed measured satisfaction with traditional pharmacy services they were referred to as satisfaction with "*general services*". These included articles measuring satisfaction with general organisational aspects such as pharmacy location, appearance, waiting time for prescriptions, accuracy of prescriptions, information provision, staff diligence, interpersonal skills of providers.

Intervention services

If the reviewed article pertained to satisfaction with a single focussed intervention it was referred to as satisfaction with "*intervention services*".

Cognitive services

If the article under review pertained to measurement of satisfaction with a service described as complex, advanced, comprehensive, cognitive, specialised, pharmaceutical care or disease management, then it was referred to as satisfaction with "*cognitive services*". Usually such services pertained to a disease/condition involving pharmacists providing a combination of roles including screening, objective clinical function measurement, collaboration with other professionals, patient follow-up, goal setting, medication management, adherence support, self management counselling and health education.

Throughout this review, pharmacy "clients", "patrons", "participants" or service "users" are referred to as "patients".

Results

The search strategy utilised is outlined in Fig. 2. A total of 531 articles were obtained from combined database

searching. After elimination of duplicates and screening as per inclusion/exclusion criteria, 24 articles were retrieved (Fig. 2).

General overview

All 24 studies included in this review, focussed on patient satisfaction as an outcome measured for either *general* [28–38] (46%), *intervention* [39–44] (25%) or *cognitive* [45–51] (29%) services. Apart from being measured as an outcome of a service, no studies reported research aimed at exploring purely patient satisfaction. None of these 24 studies tested any theoretical models of satisfaction. Many retrieved studies reported satisfaction as a secondary outcome or as a global outcome and hence were excluded. Several studies, however, reported on the development and evaluation of instruments to measure satisfaction with pharmacy services [37, 38, 44, 50, 51].

Sampling methods

Sample population

While most of the studies conducted in all service types—*general*, *intervention* and *cognitive*, were interested in obtaining views of regular pharmacy clientele, a few targeted specific populations such as patients with asthma [39, 45], diabetes [34], coronary heart disease [49], HIV [35] and those on anticoagulation therapy [47] and antidepressant therapy [41].

Sample recruitment

In all service type (*general*, *intervention* and *cognitive*) studies, patients were generally recruited at pharmacies [28, 32–34, 41–44, 47–49, 51] (by researchers or pharmacists) Three studies, however, in an attempt to minimize social desirability bias, conducted recruitment at clinics [37, 39] or at hospital outpatient departments [29]. In these three studies, patient recruitment was off site and occurred after the delivery of an intervention [39] or general [29, 37] service in a community pharmacy. One study randomly recruited patients using telephone directories [40].

Study design

Most studies reporting on patient satisfaction with *general* services used a cross-sectional sample of patients, i.e. a convenience sample of those who had, or were experiencing a service were asked to evaluate the service in terms of satisfaction at that point of time [29, 30, 32–35]. In studies reporting on satisfaction with *intervention* services, only one was randomised at pharmacy level [41] and one was randomised at patient level [40]. The majority of these *intervention* service studies were conducted post hoc, i.e. after the delivery of intervention [39, 40, 42]. Most of the

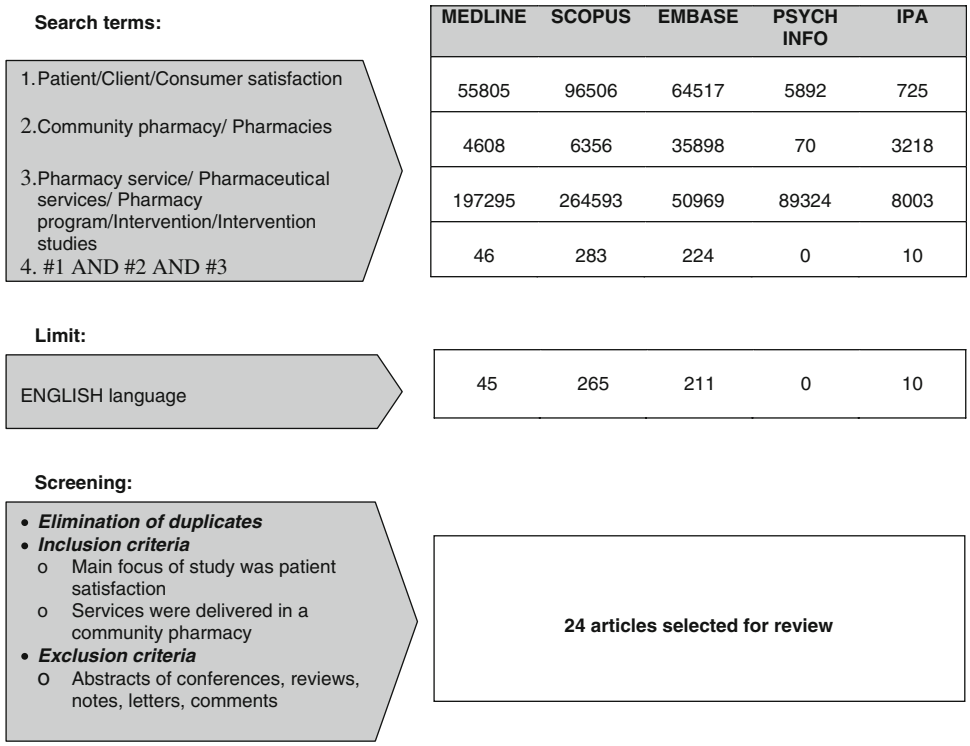

Fig. 2 Search strategy

studies investigating satisfaction with *cognitive* services were randomised, 2 at patient level [48, 49] and 2 at pharmacy level [45, 46]. These *cognitive* service related studies either measured satisfaction pre and post service [46, 47, 49] or post-service only [45, 48].

Method of satisfaction measurement

All the studies reviewed used questionnaires for measuring patient satisfaction. Administration modes ranged from self completion on site [42, 44, 47, 51], provider/researcher administered either on site (face to face interviews) [28, 32], or via telephone [40, 41, 46], or mailed [30, 34, 39, 43, 45, 47–50]. One innovative study reported the use of trained volunteer patients as 'mystery shoppers' to assess and report their satisfaction with services provided by different health care professionals [36].

General services

Of the 11 studies [28–38], two compared patient satisfaction with services provided at different types of pharmacies [28, 31] (e.g. chain vs. independent, regular vs. mail order pharmacies etc.). The majority of studies measured satisfaction using self-developed, non validated instruments or ad hoc instruments with items adapted from previously published papers [30, 32–35].

Four studies were involved in the development and validation of instruments [28, 29, 37, 38]. Two studies authored by MacKeigan and Larson [37, 38] report on development and validation of an instrument (MacKeigan and Larson's instrument) for measuring patient satisfaction with *general* pharmacy services. Their questionnaire was based on the PSQ [25]. Reliability and validity assessments of the MacKeigan and Larson's [37, 38] instrument identified seven dimensions of satisfaction: explanation, consideration, technical competence, finance, general, accessibility and product availability. This instrument was employed by a subsequent study, to measure diabetes patient's satisfaction with community pharmacy services in the UK [34].

Kamei et al. [29] also reported the development and psychometric analysis of an instrument to measure patient satisfaction with *general* services. Their instrument measured 7 dimensions of pharmacy services: attitude of pharmacist, availability of over the counter products, convenient hours, facilities, availability of special services, convenient location and medication record keeping. In a factor analysis, a significant positive relationship was found between the first 4 dimensions and satisfaction. Oparah and Kinkanme [33] used parts of this instrument, to measure satisfaction in Nigerian community pharmacies.

Briesacher and Corey [28], compared patient satisfaction with pharmacy services delivered at independent and chain pharmacies. They developed an instrument labelled as the Pharmacy Encounter Survey (PES). Adapted indirectly from the PSQ [25], PES encompassed 4 dimensions of satisfaction: interpersonal manner, technical quality, telephone accessibility, convenience of location and was administered to consecutive patients immediately after their visits to randomly selected chain and independent pharmacies. Interestingly, patients reported higher satisfaction ratings with independent pharmacies as compared to chain pharmacies [28]. Patients were most satisfied with pharmacy location and least satisfied with waiting time [28].

Intervention services

Six studies investigated patient satisfaction with an *intervention* delivered by community pharmacists [39–44] of which five measured satisfaction with *intervention* (Table 1) while one was involved in instrument development. All but one used questionnaires developed ad hoc; usually by using suitable items from previously published questionnaires. One study developed and validated a questionnaire specifically for measuring satisfaction with drug dispensing and identified a uni-dimensional satisfaction construct [44].

Cognitive services

Seven studies investigating patient satisfaction with *cognitive* pharmacy services as their primary focus were included and reviewed [45–51]. Of these, five actually measured satisfaction with the *cognitive* services and have been detailed in Table 2, while two studies were aimed at developing and validating instruments to measure the pharmaceutical care domain [50, 51]. The five studies measuring satisfaction with *cognitive* services used self-developed ad hoc instruments [45–48]. This was probably due to the lack of an instrument which can measure the experience of such complex pharmaceutical services.

Even though two questionnaires were specifically developed for measuring satisfaction with *cognitive* services (Pharmaceutical care), one was developed in Spanish [51], limiting its access, whilst the other was tested in patients who were naïve to cognitive services [50], thus limiting its applicability. Further, both instruments lacked any patient input in the developmental stage.

The first of these studies designed to develop a questionnaire, modified a previous questionnaire which had been developed by the same researchers [50]. Factor analysis identified 2 dimensions mainly pertaining to "friendliness" and provider skills [50].

Table 1 Patient satisfaction with intervention services delivered in community pharmacies

Reference	Country	Study focus	Instrument focus	Results
Liu et al. [39] (1999) *Sample population*: Patients with asthma *Study design*: Post hoc, uncontrolled *Sampling:* Convenience *Participants*: 106 intervention pts recruited from asthma clinics *Method*: Mailed questionnaire *Instrument:* Self developed	USA	Patient expectations and satisfaction with asthma related counselling services	Patient perceptions regarding frequency and importance of counselling regarding asthma education (role of medications, inhaler technique, asthma control), patient satisfaction with counselling, patient-pharmacist relationship and willingness to pay.*	The majority of patients (62%) reported being 'somewhat' to 'pretty satisfied' with the services provided by their pharmacists despite suboptimal levels of counselling While asthma education was regarded to be important in managing asthma, most patients (> 90%) indicated that their community pharmacist rarely discussed their asthma management. A significant relationship was observed between frequency of counselling and patient satisfaction ($p < 0.001$). Counselling was provided for less than 3 minutes and most of the participants (75%) were unwilling to pay* out-of-pocket for the counselling by pharmacists.
Kansanaho et al. [40] (2002) *Sample population:* General population *Study design*: Post hoc, uncontrolled *Sampling:* Random at patient level *Participants*: 200 intervention pts, 1 CP *Method*: Telephone interview *Instrument:* Self-developed	Finland	Patient satisfaction with pharmacy delivered counselling services	Patient perceptions regarding the pharmacy visit frequency, counselling received, initiator of counselling episode and the usefulness and effect of counselling on patient's health related behaviour.	Majority of the patients (97%) regarded counselling as important. Counselling led to a positive effect on health behaviours (31%) and better understanding of medications (36%) Pharmacist was the counselling initiator in 70% of the cases.
Bultman and Svarstad [41] (2002) *Sample population:* Patients on antidepressant therapy *Sample population:* Patients on antidepressant therapy *Study design*: Pre test Post test uncontrolled *Sampling:* Random at pharmacy level, *Participants*: 100 intervention pts, 23 CPs *Method*: Telephone interviews *Instrument:* Self-developed using previously published studies	USA	Impact of pharmacist monitoring and support on patient satisfaction with and adherence to antidepressant medication therapy.	Patient's medication history, their knowledge medication use and beliefs about medication were identified. Patient perceptions about pharmacist monitoring behaviour (therapy management and problem solving), patient satisfaction regarding the amount of time they were feeling better, and how much the medication bothered them and overall satisfaction	Pharmacist monitoring and initial medication beliefs were positively associated with patient satisfaction (t = 2.56, $p < 0.01$ and $t = 5.51$, $p < 0.001$) and adherence to therapy ($t = 2.74$, $p < 0.01$ and $t = 3.01$, $p < 0.01$). Patients had positive beliefs of their antidepressant medications. Patients reported that the pharmacist inquired whether they had any concerns (75%), listened to their concerns (54%) and encouraged them to ask questions (53%) Patients were very satisfied (47%) or satisfied (28%) with their antidepressant therapy; 83% however reported discontinuing or deviating from their prescribed doses

Table 1 continued

Reference	Country	Study focus	Instrument focus	Results
Singhal et al. [42] (2002) *Sample population:* General population *Study design*: Post hoc, uncontrolled *Sampling:* Convenience *Participants*: 160 intervention pts, 3 CPs, 2 ambulatory clinics *Method*: On-site questionnaire *Instrument:* Self-developed instrument adapted from a previously published study	USA	Impact of directive guidance (DG) behaviour (information provision, feedback and goal setting) by pharmacists on patient satisfaction with pharmaceutical care services	Patient perceptions of pharmacist's DG behaviours and their satisfaction with pharmaceutical care services	Higher rates of DG behaviours were associated with greater patient satisfaction with pharmaceutical care services ($p < 0.001$) Compared to patients from community pharmacies, patients from ambulatory clinics perceived higher rates of DG behaviours as well as greater satisfaction with pharmaceutical care services ($p < 0.05$)
Pronk et al. [43] (2003) *Sample population:* General population *Study design*: Pre-test post-test parallel control *Sampling:* Convenience *Participants*: 6341 (pre-test), 5199 (post-test) and 2034 (12 months after intervention) intervention and control patients, 14 control CPs, 14 intervention CPs *Method*: Mail back questionnaires distributed at pharmacies. *Instrument:* Self-developed	Nether lands	Patient satisfaction with education activities program and pharmacy services	Patient opinions about the services provided by the pharmacy in relation to waiting time, diligence of staff, information provision, preferred provider for asking about side effects and reasons for difficulties in retrieving information and for lower satisfaction with information obtained.	High baseline patient satisfaction with helpfulness, waiting time, ease of asking questions, answers to questions and patient leaflets provided. Intervention was associated with a positive increase in patient ratings of 'helpfulness' ($p < 0.05$) Majority of the patients (59.5%) regarded pharmacy as a source of information about medications. The most cited reasons for experiencing difficulties in asking questions were related to lack of privacy (16.9%), waiting time of other patients (8.8%) and busy employees (6.7%). Receiving too little information was the most frequently cited reason for lower satisfaction (7.5%)

* Patients' willingness to pay is taken as a surrogate marker of satisfaction in some studies, although this would be technically inappropriate

CP Community pharmacy

Table 2 Patient satisfaction with cognitive services delivered in community pharmacies

Reference	Country	Study Focus	Intervention	Instrument Focus	Results
Kradjan et al. [45] (1999) *Sample population:* Patients with asthma *Study design*: Post test, RCT *Sampling:* Random at pharmacy level *Participants*: 678 intervention and control pts, 90 CPs *Method*: Mailed instrument *Instrument:* MacKeigan and Larson instrument [37]	USA	Patient's perceived benefits and satisfaction with an asthma management service	Identifying drug-related problems, therapy management, checking device technique and collaboration with GPs	Patient perceptions regarding pharmacists ability to provide the service, perceived benefit of the service with respect to the asthma control and satisfaction with timeliness, access, explanation, skills, collaboration with physicians	General satisfaction with pharmacy services was high but not statistically different between intervention and control groups (80% intervention patients versus 78% control patients) Patients had low expectations from their pharmacists regarding asthma-related care
Volume et al. [46] (2001) *Sample population:* Elderly patients using three or more medications *Study design*: Pre, mid and post test, RCT *Sampling:* Random at pharmacy level *Participants*: 292 intervention and control pts, 16 CPs *Method*: Telephone interviews *Instrument:* Self-developed instrument adapted from previously published studies (MacKeigan and Larson instrument [37], Johnson et al [62])	Canada	Patient expectations and satisfaction with pharmacy services after the provision of pharmaceutical care	Provision of comprehensive pharmaceutical care services	Patient satisfaction with provider skills, therapy management and goal setting, explanation, diligence, financial aspects and collaboration with physicians	High baseline satisfaction was observed Provision of pharmaceutical care affected patient expectation and satisfaction but the differences were very small. Patient satisfaction was positively affected by pharmacists evaluation and goal setting, communication with other health care providers
Coleman et al. [47] (2004) *Sample population* : Patients attending anticoagulation clinic *Study design*: Pre-test and post-test, uncontrolled *Sampling:* Convenience *Participants*: 16 intervention pts, 1 CP *Method*: On-site (pre-test) and mailed (post-test) questionnaires *Instrument:* Self-developed	UK	Patient perspectives regarding an anticoagulation and stroke prevention service	Measurement of INR, dose adjustments	Patient views on medicines usage, their perception of anticoagulation control, their preferred setting for provision of service (pharmacy or hospital), and their satisfaction with aesthetic and information provision aspects of the service.	High level of patient satisfaction with the service and pharmacists. Majority (63%) reported increased knowledge of therapy and 43% felt they had greater anticoagulation control compared to the beginning of the study. Majority of patients (86%) wanted the community pharmacy service established permanently.

Table 2 continued

Reference	Country	Study Focus	Intervention	Instrument Focus	Results
Stuurman-Beize et al [48] (2005) *Sample population* :Patients with pulmonary disease *Study design*: Post-test, uncontrolled *Sampling*: Random at patient level *Participants*: 141 pts Intervention patients, 22 CPs *Method*: Mailed questionnaire post-intervention and consultation with pharmacist one year after start of interventio *Instrument:* Self-developed	Netherlands	Investigating patient satisfaction with a pulmonary disease and medication use service	Counselling and education regarding disease state, medications and devices and self management.	Patient perceptions regarding importance of services provided and their satisfaction with expert knowledge, accuracy of pharmacist, information provision, consultation, education and consequences of intervention.	Patients (> 90%) were highly satisfied with the service and considered it important. Patients reported increased knowledge about medications and devices (47%), skills, ability to cope with medications (51%), and fewer symptoms (36%) 61% of patients indicated that their reduced symptoms were related to the consultation with their pharmacist
Tinelli et al. [49] (2007) *Sample population:* Patients with coronary heart disease *Study design*: Pre-test, post-test, RCT *Sampling:* Random *Participants*:, 1232 (pre-test) and 1085 (post-test) intervention and control patients, 60 CPs *Method*: Mailed questionnaire at baseline and 12 months after intervention *Instrument:* Self-developed	UK	Investigating satisfaction, attitudes, expectations and experiences of patients with a pharmacy-based medication management service	Assessment of therapy, compliance, lifestyle and social support issues.	Patient satisfaction and their experience with most recent pharmacy visit, their expectations and relationship with pharmacist.	High levels of satisfaction with pharmacy services. Mean satisfaction scores were significantly higher for intervention patients as compared to controls (46.0 vs. 43.0, $p < 0.01$) Intervention patients were positive about medication management by pharmacists, likely to recommend the service to others (51%) and found it easier to discuss medications with their pharmacists (32%). 76% intervention and 85% control patients preferred to discuss medications with physician

CP Community pharmacy

The second of these studies, reported on the development and validation of a questionnaire in Spanish [51], based on previous work [37, 38, 46]. A factor analysis on the patient satisfaction data revealed 3 dimensions related to provider skills, interpersonal manner, and aesthetic/general pharmacy characteristics [51].

Another study designed to develop and validate an instrument measuring satisfaction with a cognitive service (diabetes), was identified locally after the literature review process, and has been included here [52]. This instrument was developed based on qualitative interviews with patients who experienced the novel diabetes cognitive service, and on previous research. Using factor analyses, this study identified 3 dimensions of satisfaction; pharmacist service, self management, knowledge/understanding of diabetes [52].

Summary of patient satisfaction evaluations

A high level of satisfaction was observed in a majority of the studies reviewed for all service types. For *general* services, pharmacist attitude, medication availability, convenience, pharmacy facilities, location were found to strongly influence patient satisfaction positively [28, 29, 33]. Prescription fill waiting time consistently influenced patient satisfaction negatively [28]. In case of *intervention* services, patients were usually very highly satisfied with the intervention delivered. Further, studies reviewed indicated that the higher the frequency of counselling and monitoring and the more directed the guidance, the greater the satisfaction rating [39, 41, 42]. In one study, however, high levels of patient satisfaction were reported despite sub-optimal ratings for counselling levels [39]. Another interesting observation was the high levels of baseline satisfaction reported prior to any intervention delivery [43]. High satisfaction ratings with different *cognitive* services were also observed in all reviewed studies.

Discussion

An analysis of the available literature has been conducted and studies measuring patient satisfaction with pharmacy services delivered by pharmacists in a community setting were identified and evaluated. This is one of the first reviews of the pharmacy literature evaluating the utilisation of patient satisfaction with differential levels of pharmacy services. Results indicate that the profession has been diligent in adopting the measurement of 'satisfaction' in addition to core clinical outcomes. The review also suggests further a noticeable trend of high levels of satisfaction with services, be they *general*, *intervention* based or *cognitive* services. This pattern seems consistent with patient satisfaction with other health care services [53]. Interestingly this scenario is different when "client satisfaction" is measured with non-health care services [54].

Only very few studies measuring satisfaction collected data from patients randomised to receive service/intervention and compared it to those that did not. Often satisfaction was only measured post hoc after service/intervention was delivered. For the few which used a pre-test post-test design, high baseline satisfaction was observed both pre and post service delivery thus limiting the ability to measure change in response to a service.

One of the main problems in the measurement of patient satisfaction in any setting has been the lack of consistent instruments measuring satisfaction [55]. Most instruments are developed ad hoc for individual services and measure items that suit individual services, thus making it difficult to collate information, or to draw conclusions from the results or to be able to apply them to future studies.

As outlined in Fig. 1, discrete theories to explain patient satisfaction as a concept have been proposed. The least abstract and most convenient theory that can be used to scaffold a method of measurement is the concept of satisfaction as a multidimensional construct and generally involves utilising measurement tools that invite respondents to rate various service characteristics. This is the method most studies adopt in the general pharmacy and other health literature [25, 28, 29, 37, 55]. Most instruments used to measure satisfaction in pharmacy can trace their origins to the work of Ware et al. [25] and the multidimensional construct. This multidimensional conceptualization has its limitations in that patients are forced to evaluate aspects of services defined from a heath-system/provider perspective and the measures fail to take patients perspective into consideration [14]. This lack of patient input may lead to misleading results.

Other theoretical frameworks of patient satisfaction have been explored with respect to pharmaceutical services [56, 57], for example equity based, affect based, disconfirmation of expectations, but none have been investigated in the community setting, and no tools to measure satisfaction based on the above theories e.g. affect, equity or expectation matching have been empirically tested.

In the health services literature, whilst there is no consensus regarding a particular theoretical framework on which patient satisfaction may be assessed [12, 13, 55, 58], generally, satisfaction is extensively measured using multidimensional measures [25, 59]. In the pharmaceutical services area, Schommer and Kucukarslan [14], recommend the use of evaluative and affective tools (that usually focus on patient's reaction to particular service experiences) for ambiguous, hard to define services which may be applicable to *cognitive* and *intervention* services and multidimensional measures for well-defined services which

may be pertinent to *general* services. It may also be imperative to utilise alternative approaches such as conjoint analysis, which are based on patient preferences for different features of services or those measuring perceived differences between expectations and experiences, so as to optimise patient satisfaction [55, 60].

Several issues in the measurement process are important and need to be taken into account and controlled wherever possible. These include selection bias, for example in most studies, patients selected to test satisfaction were a convenience sample, usually 'hand picked' by the pharmacist provider [33, 42–44, 50, 51]. Social desirability will thus be an issue, as patients often tend to rate responses to match what they think the provider would find desirable [58]. Response rates in most studies were also low, possibly creating a non-response bias. In most studies reviewed, non responders were not contacted to elucidate reasons for non-response. The length of time between experience of service and evaluation may lead to recall bias.

One of the interesting observations in our review was the high level of satisfaction reported for all types of services, a situation not unique to pharmacy and similar to other general health services [53, 61]. One explanations tendered is that of low expectations of patients. Other explanations could be the lack of validated instruments that encompass varied theoretical bases of understanding satisfaction which in turn translate to the fact that elements of satisfaction have not been fully explained or adequately measured.

Conclusion

Patient satisfaction is an important humanistic outcome that needs to be measured given its importance in determining the sustainability of health care services. Our review found that it has been measured within the community pharmacy context to a certain degree, although more research is required in developing and testing instruments based on proposed theoretical frameworks, testing satisfaction pre and post hoc and in well designed randomised controlled trials, measuring changes in satisfaction over time, and/or after services have been improved. Further, utilisation of novel approaches that involve an understanding of expectations and preferences of patients and matching these to the services provided in order to enhance and explain satisfaction levels may be an approach that provides valuable insight into this often used, yet poorly understood concept.

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