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Research Article

Optimising Medicines Use by South Asian and Middle Eastern Groups in a Primary Care Setting in the UK: Validation of a Tool to identify Medicine-Related Problems

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ABSTRACT

The ethnic minority groups (EMGs) are perceived to be more prone to medicine-related problems (MRPs) than the general population in United Kingdom. There is, therefore, a need for improved detection and prevention of MRPs in EMGs, such as South Asians (SA) and Middle Eastern (ME) populations, to avoid unnecessary GP visits and potential hospital admissions. In this cross-sectional study, the data were collected in 80 face-to-face semi-structured interviews using Gordon's MRPs tool from seven pharmacies in London. The study involved patients aged over 18 from SA/ME origins who were prescribed three or more medicines. Interviews were audiotaped, transcribed verbatim and analysed thematically using Gordon's coding frame and Nvivo 10. All issues under each of the main themes were explored and compared in an attempt to systematically adapt the Gordon's MRPs tool for SA/ME populations. Some modifications were made to the original Gordon's MRPs questionnaire to capture patients' views regarding the use of medicines and the access to services. This also helped in identifying MRPs specific to SA/ME populations and proposing recommendations to address them. This included targeted medication use reviews (MURs), and tailored interventions to patients' needs in improving medication use and access to services.

INTRODUCTION

Medicine-related problems (MRPs) can adversely affect patients' health and treatment outcomes (Mannheimer et al., 2006; Viktil et al., 2006; Laroche et al., 2007). It can be associated with unnecessarily consume of the healthcare system resources due to subsequent morbidity, mortality and extra general practitioner (GP) consultations (Department of Health, 2001; Mannheimer et al., 2006; Viktil et al.,

2006; Laroche et al., 2007). Many studies have found that patients do not manage their medicines effectively and that they may experience a wide range of problems (Lip et al., 2002; Lip et al., 2004; Gordon et al., 2005; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005; Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010; Alhomoud et al., 2013). The frequency of MRPs in the community, as reported in the literature, is between 2.5 - 65% (Hannaoui et al., 1996; Lee and Beard, 1997;

Westerlund et al., 1999; Gordon et al., 2005; Gordon et al., 2007). Ethnic minority groups (EMGs), including South Asians (SA) and Middle Easterners (ME), may be more vulnerable to MRPs than general population. This is due to the fact that EMGs in general often have a higher than average prevalence of chronic diseases including diabetes, cardiovascular and rheumatoid diseases (Sidi et al., 2009; Opara et al., 2010; Alhomoud et al., 2013). This may lead to co-morbidities and multiple drug therapies and consequently MRPs.

Patients from different cultural backgrounds may be expected to have their own views, perceptions and beliefs which will affect their use of medicines (Van Mil et al., 2004; Bailey et al., 2009; Alhomoud et al., 2013; Ens et al., 2013). In addition, these groups are associated with communication and language barriers, and different experiences, needs and expectations than the wider UK population which may also influence their ability to manage their medicines effectively (Bailey et al., 2009; Alhomoud et al., 2013; Ens et al., 2013). Moreover, it is acknowledged in most health care systems that SA and ME groups have experienced inequalities in health and in accessing healthcare services (Alhomoud et al., 2013). Also, evidence suggests that medicine-related needs may be poorly met for these groups (Alhomoud et al., 2013).

From 1990 to 2003, 14 MRPs classification systems were introduced to identify MRPs but only eight stated a clear definition for MRPs (van Mil et al., 2004). Two classification systems were introduced after year 2003 (AbruRuz et al., 2006; Gordon et al., 2005). Only two classification systems have a hierarchical structure that separates problems from causes and interventions (AbuRuz et al., 2006; PCNE, 2010). In addition, only four classification systems have been validated (Westerlund, 2002; Gordon et al., 2005; AbuRuz et al., 2006; PCNE, 2010). From our perspective, a good classification system: (1) should have a clear definition of the MRPs; (2) it should also be validated and usable in practice; (3) it should be structured in a hierarchical way, clearly separate cause from problems and preferably also have an intervention section. The only three classifications that meet the first two criteria are PCNE, Gordon, AbuRuz systems. Although Gordon et al.'s system has no hierarchical

structure, it was employed as a guide to classify MRPs in the current study. This is because this system includes all aspects of MRPs and focuses on patients' perspectives and needs. In addition, this system does not only address medicine-related problems but also service-related problems that many ethnic minority patients are experiencing. Finally, PCNE and AbuRuz systems do not include patients' opinions or perceptions in the classification process because they believed that patients' therapy expectations and goals are the same as the professionals', which may not be true for all patients.

Although EMGs may be more prone to MRPs than general population, none of the previous tools have been used to identify MRPs in these groups. In addition, only a small number of instruments have focused on patients' views, beliefs and experiences (Gordon et al., 2005; Lawton et al., 2005; Morgan and Figueroa-Muñoz, 2005) as the majority of tools used to identify MRPs have been from healthcare professionals' (HCPs) perspectives (Van Mil et al., 2004). Thus, there is a need for improved detection and prevention of MRPs in SA and ME groups in the primary care, before unnecessary hospital admission or a GP visit is required. Thus, the objective of this study was to select an existing validated tool that can be employed to identify MRPs from patients' perspectives and experiences and to make recommendations for the tool to be valuable for use in SA and ME populations.

MATERIALS AND METHODS

MRPs tool selection

The tool selected was one which: (1) has a broad definition of MRPs ranging from prescribing errors through to obtaining supplies, monitoring for appropriateness and patients' behaviours which influence their use, (2) is valid, reliable, applicable and practical, (3) considers patients' perspectives, experiences and needs. The Gordons' MRPs questionnaire is a short practical tool which identifies patients who are experiencing MRPs from their perspectives and experiences by obtaining systematic information and detailed explanation and clarification (Gordon et al., 2005; Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010). It employs

a broad definition of MRPs, 'any problem experienced by a patient that may impact on their ability to manage or take their medicines effectively', to detect a wide range of problems (Gordon et al., 2005; Gordon et al., 2007; Sidi et al., 2009; Opara et al., 2010). It examines in detail the problems arising from the patients' use of medicines and health services which may ultimately influence patients' ability to manage their medicines effectively. It seeks to explore factors and events leading to MRPs from patient's perspective. The tool has shown to be valid and able to correctly distinguish between patients with at least one MRP and those identified with no MRPs (for 83% of the cases) (Gordon et al., 2005). This tool is also reliable and the interrater agreement was reported to range from 99% to 100% (Gordon et al., 2005). The previous tools that have been used to investigate medicine-related problems are discussed in the 'Introduction' part.

The MRPs original screening tool is divided into five sections which involve questions regarding patients' medicines, the illnesses for which they take their medicines, medications use, service access and background information on participants (Gordon et al., 2005):

Section 1 (About your medicines)
Participants were asked in this section to recall the names, doses, dosing frequencies and purposes for which they used their prescribed and non-prescribed medicines. The question aimed at obtaining information on what patients were taking to gain insight into patients' knowledge of their medicines and to provide a basis for subsequent questions. This was cross-checked with pharmacy records. This also provided data to indicate any potential duplication of medicines, drug-drug interaction, lack of information on medicines, under-dose, over-dose and problems with non-prescription medicines. Participants were afterwards asked to report if they received help with their medicines to describe the nature of the help received. The questions asked under each section in MRPs tool are presented in Table 1.

Section 2 (About the illnesses for which you take your medicines)
This section illustrates the number of hospital admissions including accident and emergency, and consultations as an outpatient or with private healthcare professionals in the past five years. It highlights differences in service use between these groups. It may reflect perceived access to care, and therefore it may reflect people finding out more about their medicines.

Section 3 (More about your medicine)
This section measures self-reporting non-compliance with prescription medicines and demonstrates the nature and frequency of patients' non-compliance. Information was collected in this section on participants' perspectives of their medicine-taking behaviour.

Section 4 (About you GP surgery and pharmacy visits)
This section gives details relating to contacts with, and consultations at, the pharmacy and surgery. Participants were asked about the frequency of their consultations at the GP surgery (with a GP or practice nurse). They were asked in this section to report how often they obtained their repeat prescriptions. Their purposes for consulting the pharmacist and a question on whether they have ever run out of supplies of medicines were also included. A final question in this section was about patients' sources of information on medicines and illnesses. At the end of the questionnaire, participants were given the opportunity to add additional comment on medicine- or service-related issues that were not covered during the interview. The following problems emerge at this stage: lack of information or discussion, problems with repeat prescription, problems with interface, monitoring and review, and GP surgery and pharmacy service problems.

Section 5 (About yourself)
In the original tool, this section includes questions on characteristics of participants (e.g., age, gender, country of birth, ethnic group, and whether or not they live alone) to describe population and not to identify MRPs.

Study setting, sampling and recruitment

Eighty face-to-face semi-structured cross-sectional interview study was conducted in seven pharmacies in the following areas of London: Camden, Brent, Harrow and Westminster. This was undertaken to examine whether Gordon's MRPs tool that was used in this study is able to identify MRPs in SA and ME groups and to capture socio-cultural influences on medicines use and service access in order to make recommendations for the tool to be valuable for use in SA and ME populations. Patients were from SA and ME origins, aged over 18 and prescribed three or more regular medicines.

The reason behind focusing on the SA group in the present study was because people from the Indian subcontinent tend to perceive themselves as less healthy than those in the general UK population (ONS, 2011; Alhomoud et al., 2015). In addition, South Asians now represent one of the UK's largest minority ethnic grouping (ONS, 2011). The Middle Eastern group was selected in the current study because the percentage of immigration to the UK among this group is expected to increase due to political instability in the Middle East. In addition, there has been little research which specifically examines medicine-related problems in South Asian and Middle Eastern populations (Alhomoud et al., 2015).

Patients were identified when presenting with a prescription in the pharmacy. Data collection continued to data-saturation, until the emergence of no new issues. The data were collected from May 2011 to October 2011. The full details on recruitment, data collection, translation of the questionnaire and transcripts, and quality assurance, are described elsewhere (Alhomoud et al., 2015).

Ethical approval was obtained from London City and East Research Ethics Committee. A patient information sheet was provided to all eligible participants who wished to take part. Informed written consent was obtained prior to commencing the interviews. The patients were reminded that they could withdraw from the study at any time without providing a reason. The interview was audio-recorded for verbatim transcription with the

participant's authorization. For participants who declined to have an audio-recorded interview, only researcher field notes were taken.

If a significant problem was identified in the course of the research, the patients were advised and encouraged by the researcher to consult their pharmacist or general practitioner (GP), or alternatively, if they preferred and with their permission and consent, the researcher spoke to the community pharmacist on their behalf. Then it was the responsibility of the community pharmacist to inform the patients' GP. In the event that the patients did not want to inform their GP, then this matter was handled by the community pharmacists through their normal clinical practice (i.e., it was the clinical judgment of the pharmacists in that situation regarding whether they wanted to inform the patients' GP when patient safety overrides patient confidentiality). Any information that was obtained from the patients or pharmacy records was be anonymised and treated as confidential information and kept in a coded format without the name of the patients and locked all the time in a designated cabinet for this purpose. Data were stored in the University College London (School of Pharmacy) computers where all files were password protected and only the researcher was allowed to access the data.

Data analysis

Interviews were guided by the tool and principles of qualitative inquiry to achieve our objectives. Following each interview, the audio-recorded data were transcribed verbatim to enable qualitative analysis. The interviews were analyzed thematically using Gordon's coding frame and Nvivo 10 software. Gordon's coding frame consists of nine main broad categories or codes of MRPs plus a number of sub-codes under each main code (Alhomoud et al., 2015). When a new problem emerged from a participant's discussion and was not included in Gordon's coding frame, it was added to the most appropriate category or code (inductively) and all the previous transcripts were checked for the relevance of this new code to ensure consistency and thoroughness of coding. Any code that did not fit into this framework was analyzed separately (Alhomoud et al., 2015).

Constant comparison techniques, in which all items of data are compared with existing codes and sub-codes were employed. Consequently, the coding frame was refined intuitively and moved from being largely descriptive to being more responsive to emergent and recurrent codes particular to SA and ME groups. This stage ended with creating seven major codes. One code (i.e., the use of non-prescription medicines) derived from the Gordon's MRPs coding frame and six new codes comprising religious practices and beliefs, extent of family support, and travelling abroad – to patient's homeland or to take religious journeys, illiteracy, language and communication barriers, lack of translated resources, perceptions of healthcare providers, and difficulty consulting a doctor of the same gender, were found to be particular to SA and ME groups (Alhomoud et al., 2015). Through thematic coding and analysis of interview transcripts, the researcher learned that there was a need for a revised version of this tool that can identify MRPs that may be specific to SA and ME cultures. If these problems are unaddressed, this may lead to poor chronic disease management and consequently more hospitalization, co-morbidities, and wasted resources.

RESULTS AND DISCUSSION

Response rates

Eighty patients (of a total of 100 invited to do so) took part in the interview (response rate: 80%). A full overview of the participants' characteristics is described elsewhere (Alhomoud et al., 2015).

Recommendations for the Questionnaire use in SA/ME groups

The principal changes that were made to the original Gordon's MRPs tool included: describing the extent of support provided to patients by their families in more details (Section 1), providing additional prompts to capture the reasons for intentional non-compliance that are important to SA and ME cultures (Section 3), presenting additional prompts to capture the problems that are likely to face ME and SA groups in accessing healthcare services (Section 4), describing patients' perception of pharmacists' role, and pharmacy services (Section 4), and, asking for recommendations or advice from

patients in order to provide care that is better tailored to their needs (Section 4), and, finally adding additional patients' characteristics (Section 5). The modifications made are described below:

The extent of family support / help with medicines (Section 1)

Our findings showed that almost half (49%) of interview participants reported that they received help with medicines. The help received was mainly from a family member and was regular (i.e., daily, weekly, fortnight or monthly). The extent of support revealed by participants was different, ranging from undertaking one activity to being responsible for all aspects of medicine management. Unlike Gordon et al.'s study (2005) which showed that only 19% (49/259) of patients reported receiving help with medicines, mainly from family members and the nature of help was limited to collecting prescriptions and dispensed medicines, and reminding participants to take medicines. It is worth mentioning that Gordon conducted her study mainly among White British population (Gordon et al., 2005; Gordon et al., 2007).

Altered medication-taking behaviour was voiced by some participants in the present study as a consequence of family support. For instance, some participants received advice from their relatives to stop taking their medicines because their families perceived the harm of the medication in general to exceed the perceived benefit. Prescription medication borrowing and sharing among family members was also reported. For example, an Indian woman came to the pharmacy to ask for a further supply of Omeprazole tablets because she was sharing this medicine with her father who was already prescribed Ranitidine (dual therapy).

Our findings indicated that family support is a clearly important issue in SA and ME populations. These families tend to play a considerable role in all aspects of patients' medicine management which sometimes affected patients' medication-taking behaviour and safety. Therefore, in order to identify different issues in SAs' and MEs' family support and to be sure to establish all relevant information, additional prompts could be listed under this question. Prompts could be as follows: collecting prescriptions from GP surgery or medicines from

pharmacy, buying non-prescription medicine, reminding you to take your medicines, opening containers or pulling out tablets, administration, understanding or reading information, obtaining information, advice on medicines, and other, please describe. These prompts will enable us to identify in what way these patients have been supported (i.e., type of support they receive, by whom and how often, what patients say about the help they get and how helpful it is). This may be effective in showing how carers and participants divide tasks and share responsibilities. This may also help in optimizing medicine use, improving health outcomes and medicine management, and preventing any possible MRPs that may occur due to involving carers in patients' care. In particular, adding extra prompts may be helpful in identifying what effect family support has on patient's medication-taking behaviour (i.e. adherence). No changes have been made to section 2 in the tool; therefore, it was not mentioned in the 'results'.

Medication-taking behaviour (Section 3)

Various reasons were given by SA and ME patients for non-compliance with medications. Some reasons were very similar to the ones identified in Gordon's study and other studies but others were reported to be specific to SA and ME groups such as religious practices and beliefs, cultural and social issues, language and communication barriers, etc. These reasons that are important to SA and ME individuals may not be captured using Gordon's original tool. They were only captured when specific prompts about cultural, social and religious beliefs were introduced into Gordon's tool. Therefore, it is recommended that, after asking closed and open questions in the original tool regarding non-compliance, prompts should be given to patients to capture reasons that are important to SA and ME groups such as Ramadan, sharing or lending medicines, advice from family or friends, use of OTC or herbal remedies, travelling abroad back to their homeland or to take religious journeys, others please specify. Patients could also be asked to report the medicine and how they had changed their prescribed regimen. By using this method, more reasons which were reported to be particular to SA and ME groups can be examined as to why patients adjusted their prescribed regimens.

About your GP surgery and pharmacy visits (Section 4)

When participants were asked 'How well does this arrangement at your surgery suit you?', some participants tended to think that this question is only related to problems with appointment time, waiting time, continuity of care, and length of consultation. However, when additional prompts were given, participants started to report new problems that were particular to SA and ME groups such as seeing a GP from the same gender, language barrier and absence of an interpreter. Therefore, it is highly advised that, after asking the open question 'How well does this arrangement at your surgery suit you?', additional prompts might be provided such as seeing a GP of the same gender, language and interpretation, other please describe.

The advantage of the open question is to allow respondents to express their views fully concerning the question, and the advantage of providing prompts afterward is to invite respondents to enter their thoughts on a specific matter that they may not remember or may not consider as a potential issue. Providing additional prompts will also enable us to capture the problems that are likely to face ME and SA participants in particular in accessing healthcare services. Careful attention must be taken not to ask leading questions when prompting the question.

It is also recommended that two questions should be added to this section; these are:

Q. How well does the service at your local pharmacy works for you?

Q. Is there anything you think that your doctor, pharmacist or nurse could do more to help you better manage your medicines?

The first question will elicit responses describing patients' perceptions of pharmacists' role and pharmacy services to suggest recommendations on how pharmacy services should be developed and what services need to be implemented in order to address the needs of these populations. Such responses can describe patients' perspective of pharmacy services and the value that they derive from them and show how these services are being contextualized with patients' life world. The second question should be added in order to obtain recommendations from patients' perspectives to

support them in their use of medicines and access to services and to make them more involved in their own care. This is important to develop services which are better tailored to patients' needs.

About yourself (Section 5)
Additional patient characteristics such as main language, ability to speak English, year of arrival in the UK, religion, qualification and current employment status could be added to this section to describe the population further. This may help to target the use of the tool and ensure that relevant domains and questions are employed. This may also enrich the data by including the experiences and views of participants from different characteristics. Another reason for gathering this additional information was because people of different characteristics have been found to differ in their beliefs about health and medicines, medicine-taking behaviour and service use. For example, language barrier was voiced to be an issue in accessing healthcare services, reading and obtaining information by many participants who reported having limited English proficiency. A further example is that some Muslim participants pointed out that while fasting they adapted their use of medicines in different ways. Therefore, it is recommended that additional patients' characteristics which appear to be important to SA and ME groups should be gathered.

In comparison with Gordon's MRPs questionnaire, the culturally adapted revised version is more concise and has direct focus on identifying contributory factors to MRPs that were reported to be specific to SA and ME groups. Many of these factors could be expected to influence patient's safety, adherence, and informed decision-making. The revised tool is a practical instrument which can be used for the detection of patients with problems and provides direction for a more in-depth home review if needed.

In comparison with Medicines Use Reviews (MURs) used with patients present in pharmacies the adapted version of the tool was able to identify a wider range of problems that are reported to be specific to SA and ME groups such as religious practices and beliefs, use of non-prescription medicines, extent of family support, and travelling

abroad back – to patient's home land or to take religious journeys. Perceptions of healthcare providers, difficulty consulting a doctor of the same gender, lack of referrals to specialised care, language and communication barriers, lack of translated resources, illiteracy, lack of involvement in the treatment decisions, problems with source, delivery, type and timing of information may also contribute to the problems. Many of these factors could be expected to influence patient's safety, adherence, and informed decision-making (Alhomoud et al., 2015). The tool also gave patients the opportunity to elaborate on their problems at each stage.

The MURs could be used initially to identify patients with problems and who may benefit from a more in-depth follow-up using the adapted version of the MRPs tool. The adapted version could also be utilized during MURs or in audits to improve the quality of services and prescribing medicines.

Identifying ethnicity-specific contributory factors to MRPs is important in developing ethnically tailored intervention programmes, which have been shown to be effective in chronic diseases managements and medicine optimization (Bailey et al., 2009, Patel et al., 2014; Alhomoud et al., 2015). Thus, implementing specific standards, policies and practices that comply with patients' social, cultural and linguistic needs should have primacy in the NHS.

The current state of service provision emphasized that there is a need to redesign services on an assumption of serving multiple users with different religious, cultural and social background. For instance, including commissioning and placing complementary and alternative medicine (CAM) providers under the same scrutiny so that they can counsel patients in a manner consistent with high-quality care and evidence-based quality assurance process as HCPs (Bailey et al., 2009, Patel et al., 2014; Alhomoud et al., 2015). In addition, generating labels and written instructions in the patient's preferred language, providing instructions using graphic symbols for illiterate patients, hiring multilingual multilingual staff, using of telephone interpreting services such as Language Line and using of booked interpreters for consultations could

be helpful to ensure effective communication with those with lower proficiency in English (Cantarero- Are´valo et al., 2014; Patel et al., 2014; Alhomoud et al., 2015).

Table 1. The questions asked under each section in the MRPs tool

Section 1 *(About your medicine)*

Q. Can you tell me the names of the prescription medicines you take or use? If you are unable to tell me any names, please describe them to me. About each medicine: How many/much and how often do you take/use each day? Do you know what you are taking/using this medicine for? For how long have you been taking/using this medicine? What other medicines do you take or use? Abut each medicine: What is the name of the medicine? What are you using this medicine for? How often do you use this medicine?

Q. Does anyone help you with your medicines? Who is this person? How does this person help you? How often does this person help you?

Section 2 *(About the illnesses for which you take your medicines)*

Q. About the illnesses for which you take you medicines,

In the past 5 year have you:

a. Been admitted to a hospital? Yes/No.

b. Attended or been taken to A&E/casualty? Yes/No.

c. Called a GP as an emergency outside surgery hours (i.e., evening or weekends)? Yes/No.

d. Called a GP or made an appointment as an emergency during surgery hours (i.e., daytime)? Yes/No.

If yes, please tell me: Which year and month? For what reason? More about this.

Do you:

a. Attend hospital as an outpatient? Yes/No.

b. See any other person privately for your health? Yes/ No.

If yes, please tell me: Who you see? For what reason? How often? The last time you attended.

Section 3 *(More about your medicine)*

Q. Some people do not always take their medicines according to the instructions, but adjust the dose according to what they think they need. Do you do this? Tell me more about this?

People sometimes forget to take their medicines. Do you do this? Tell me more about this?

What problems have you experienced with taking your medicines?

What would you do if you had a problem with taking your medicines?

Section 4 *(About you GP surgery and pharmacy visits)*

Q. How often do you usually consult / see your GP about your illnesses and regular medicines?

Do you usually consult / see any other person employed at the surgery about your illnesses and regular medicines? Yes/ No. If yes, please tell me: who you see? For what reason? How often?

How well does this arrangement at your surgery suit you?

When was the last time you consulted / saw your GP or anyone else employed at the surgery about your illnesses or regular medicines?

Q. How do you usually get your prescriptions from your GP surgery?

How often do you usually get prescriptions for your regular medicines?

Q. You ever delayed taking your prescription to the pharmacy, after your supply of medicines has run out? Yes/No. If yes, tell me more about this.

Have you ever talked to your pharmacist/chemist about any matters? Yes/No. If yes, please tell me what matters.

Q. What do you think about the information you are given on your medicines?

Do you have enough information or would you like more? Enough/More. If more, what suggestions do you have to improve this?

Q. Are there any further comments about your medicines that you would like to add?

Do you have any questions that you would like to ask me?

Section 5 *(About yourself)*

Q. May I ask how old you are?

Q. Where is your country of birth? In which year did you come to the UK? Which ethnic group do you consider yourself to belong to?

Q. Do you live alone or with others?

Failure to address the UK's increasingly complex and multiple diverse populations will firmly establish that being a member of a minority will adversely impact on the availability, utility and relevance of NHS services and health outcomes. Provision of ethnic-specific services, and greater awareness of diverse explanations, wants and preferences, will help reduce health inequalities and reduce the risks associated with mismanagement and under-treatment (Bailey et al., 2009, Alhomoud et al., 2015).

Future research to examine the effect of this tool on actual changes in medicine-taking behaviour is needed. Future studies require also to examine whether this tool can be tailored to identify MRPs in people from other ethnic backgrounds. Further research is also needed in this area to compare the prevalence of MRPs between general public and other ethnic groups since there is a lack of actual evidence in terms of number of MRPs in ethnic minority groups in comparison to general public.

Strengths and limitations

Strengths: (1) the commonality of the culture and language shared by the researcher and participants especially those of Arabic origin enhanced the success of the interviews; (2) interviews gave an insight into the religious, cultural and social norms that might facilitate or impede behaviour change in order to prevent MRPs; (3) most respondents were from deprived communities, whose first language was not English, and some were illiterate in their native language – a population that may be harder to reach and at even higher risk of MRPs; (4) in pharmacies, participants were sampled at different days of the week (and at different times), to avoid selection bias and to ensure diversity the sample; (5) only one researcher was involved in data collection and the interview guide was closely followed to reduce any possibility of bias and to eliminate any inconsistencies in the procedures. Limitations: (1) due to time and resource limitations the sample of this research consisted only of SA and ME patients who were living in deprived areas; therefore, careful attention must be paid before transferring the conclusions to non-deprived immigrants and people from other ethnic backgrounds; (2) this tool can't be a score based tool as it focuses on patients'

experiences, concerns and needs and thus it might be difficult to score.

CONCLUSIONS

The main responsibility of the pharmacist when providing pharmaceutical care is to identify, resolve and prevent MRPs. The revised version of MRPs tool could have a valuable role in identifying patients experiencing MRPs from SA and ME origins. It focuses on SA and ME patients' perspectives which may help healthcare professionals understand patients' agendas and support them in the use of their medicines. Targeted MURs for SA and ME groups should be prioritised. The targeted MURs can be developed further to focus on all the issues that were reported to be specific to SA and ME groups. Tailored interventions and pharmaceutical care services to patients' needs and wants may be then required to improve medication use and service access. These interventions and services should be implemented in places that are frequented by EMGs and taught by HCPs with the same ethnic background as participants. However, the high cost of these interventions and services may present limitations for their use in everyday practice. Cost-effectiveness studies of such interventions are needed, as they would provide evidence for the importance of this area of research and build the case for the need to direct health resources at decreasing medicine-related problems.

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