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Oral health information for at-risk patients in community pharmacies: A feasibility study.

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Abstract

Background and Objectives Oral health and non-communicable diseases, such as cardiovascular disease or diabetes, are strongly associated. The majority of adults in New Zealand do not attend a dentist on a regular basis. The community pharmacist is the most commonly visited health professional. Community pharmacists view offering health advice across a range of topics, including oral health, as a core aspect of their role. Our aim was to investigate the feasibility of community pharmacies distributing oral health information for patients with non-communicable diseases.

Methods A small scale feasibility study was conducted. Five pharmacies from across Dunedin, NZ, distributed oral health packs (OHPs) containing oral health advice, oral hygiene products, and a questionnaire, to patients with cardiovascular disease or diabetes, as identified by their prescribed medication. Feedback from community pharmacists was reviewed, while simple descriptive analysis was conducted on the questionnaire returned by the participant-patients.

Results Pharmacists distributed 282 OHPs, and 99 participant-patients returned the questionnaire. Almost all thought the OHPs were very useful, and half modified their oral hygiene behaviour as a result of the pack. The community pharmacists supported the distribution of OHPs but identifying at-risk patients was challenging, while the storage of the OHPs was very difficult.

Conclusions The OHPs demonstrate potential for behaviour change with patients; however, the intervention was not practical from the community pharmacists' perspective. In its current form the intervention is not feasible nor sustainable. Given the potential for behaviour change, the pursuit of a less challenging process for community pharmacists should be explored.

Introduction

The association between poor oral health and non-communicable diseases (NCDs) has been documented over several years (Jin *et al.* 2016; Mattila *et al.* 2005; Williams *et al.* 2008). Yet many people with NCDs are not aware of the relationship, or of how to care for their oral health. While a dental health professional would likely highlight the risk association to patients, the majority of adult New Zealanders do not access dental services on a regular basis and 53% had not accessed a dentist in the year prior to the New Zealand Oral Health Survey being conducted (Ministry of Health 2010). Previous research

had indicated that community pharmacists (CPs) were the health professional most frequently approached by members of the public for a range of health advice. Members of the public expected CPs would provide free, unbiased information and often used CPs as their first point of contact for health advice, including oral health advice. Community pharmacists could be a valuable point of oral health information and advice for people with cardiovascular disease and diabetes (Blenkinsopp *et al.* 2002; Maunder and Landes 2005; Priya *et al.* 2008).

Recent surveys of community pharmacies confirm this perspective. From Northern Nigeria (Taiwo and Panas 2018), Saudi Arabia (Al-Saleh *et al.* 2017), rural Tasmania (Hoang *et al.* 2019) and Australia more generally (Taing *et al.* 2016), to Bulgaria (Dumitrache *et al.* 2016) and London (Mann *et al.* 2015), CPs continue to report that they view themselves as having an important role in providing oral health information. In the London study (Mann *et al.* 2015) there was near unanimous support for that role, along with a self-reported high level of knowledge of common oral health conditions and a desire for future continuing professional development in this area. A New Zealand study of the role CPs could play in providing oral health information and advice found that they considered it to be within their scope of practice. They expressed some concern about their knowledge of the association of NCDs with oral health, and thought that more professional development in this area would improve their confidence (Buxcey *et al.* 2012).

While CPs have indicated they have a role in providing oral health information, to our knowledge only one other trial of delivery within a community pharmacy has been reported. Sturrock *et al.* (2017) trialed an oral health information pilot in five community pharmacies in deprived areas of Durham, England. Participants were those who were eligible for free prescriptions. The intervention was focused on oral health care generally, and consisted of a 5-10 minute discussion between the community pharmacy staff member and the participant, including a demonstration of oral hygiene practices, written material in support of this, and provision of oral hygiene products. Patients reported an increase in knowledge about oral health (72%) while 66% reported that they intended to change their oral health behaviour, and 64% thought a community pharmacy was the right place for this information. Participating pharmacies reported a very positive response to participating in the trial. In particular, they appreciated the expanded service they offered and the chance to improve their own knowledge, and they noted the

importance of improved interprofessional communication (Sturrock *et al.* 2017).

This paper reports the exploration of the feasibility of delivering an oral health information intervention in five community pharmacies in Dunedin, New Zealand.

Methods

Development of the current intervention

Building on the exploration of New Zealand CPs' perceptions (Buxcey *et al.* 2012), we developed the oral health information brochure using Fishbein and Yzer's (2003) Integrative Model of Behavioral Prediction as a guide to ensure it addressed attitudes, knowledge, understanding of norms, and included a prompt to action. The brochure was added to an oral health information pack which contained dental hygiene products (toothpaste, toothbrush, dental floss, interdental brush) to remove any material barriers to action (called environmental constraints by Fishbein and Yzer, 2003) (Fishbein and Yzer 2003; Morgaine *et al.* 2015). Colgate® supported the intervention by providing dental hygiene materials for free distribution.

Feasibility Study Methods

A small scale study using mixed methods was designed to explore the feasibility of using community pharmacies to give oral health information packs (OHPs) to patients identified with cardiovascular disease including stroke, and diabetes; and to explore the potential of this intervention having an impact on people's oral health practices.

Bowen *et al.*'s (2009) definition of a feasibility study as one which examines if an intervention is appropriate for further development and research was used (Bowen *et al.* 2009). Of the four broad reasons for conducting a feasibility or pilot trial, this study focused particularly on the scientific assessment (do the participants respond, and is there an indication of effect?); and the management of the intervention (willingness to participate, capacity of and challenges experienced by, the community pharmacies in delivery; and challenges for the study personnel) (Thabane *et al.* 2010).

We invited eight pharmacies, in diverse locations, from the 21 CPs in Dunedin who had participated in our previous study and had been enthusiastic about the proposed idea, to be part of the feasibility study. They were recruited in a rolling process over three months. Initial letters were sent out to the pharmacies, followed by a phone call and visit to explain the project to the lead pharmacist, and to get consent. An information session about the project for all pharmacy staff, including asking them to inform the participant-patients about the questionnaire in the pack, was proposed by the research team.

The pack for the participant-patient was in a University of Otago identified bag. It contained 1) an oral health information pamphlet developed specifically for this trial, which focused either on diabetes, heart disease or stroke (non-communicable diseases). (Morgaine *et al.* 2015); 2) oral hygiene products supplied by Colgate® – toothbrush, toothpaste, dental floss, and interdental brushes; 3) a postage-paid short questionnaire and

pen. Participant-patients were asked to return the questionnaire after they had reviewed the pack at home. The return of the questionnaire represented consent. No follow up of any participant-patients was undertaken. Questionnaires were coded by: the pharmacy which distributed the pack, an ID number for the participant-patients, and the type of pamphlet (H = heart disease; D = Diabetes; S = Stroke) e.g. 1-001-H. Pharmacies were numbered in the order they agreed to participate. Potential participant-patients were identified by the CP if they visited the pharmacy for medication for heart disease, stroke or diabetes. Community pharmacists had previously stated that they gave oral health advice to some patients based on their medication prescriptions.

The OHPs were initially delivered to the pharmacies based on their estimation of types of medication they most frequently dispensed. They were given a number to call if supplies of the pack got low, and were contacted fortnightly to assess progress, and to ensure more packs were available in a timely manner. The questionnaire asked about the pamphlet (its usefulness and helpfulness), any oral hygiene practice change as a result of receiving the pack, where the best place to receive it was, as well as some basic demographics. Field notes of feedback from the community pharmacists about ease of identification and conversations with potential participant-patients, and OHP storage and distribution, were kept to contribute to the understanding of feasibility.

Descriptive analysis of demographics and the primary questions was undertaken. This study was not designed nor powered to assess the impact of the intervention for the participant-patients. However, the influence of age, sex, and time of last dental attendance on the knowledge of NCD/oral health links, usefulness of the pamphlet, use of the OHP, or modifying their oral hygiene practice was explored. Generic thematic analysis was conducted to investigate feedback from the community pharmacists. Bowen *et al.*'s (2009) framework for feasibility studies was used to integrate the data to arrive at a conclusion of feasibility. The framework includes the following components: acceptability to both intervention deliverers and recipients, demand for the intervention, its implementation and practicality, its ability to be adapted and/or integrated into the existing practice, and if there is any indication of possible positive impact of the intervention. Ethical approval for this study was obtained from the University of Otago's Human Ethics Committee (Category B, D10/019).

Results

Management of the Intervention

Five of the eight pharmacies agreed to participate. The participating pharmacies were spread across the city and served quite different communities; one inner city pharmacy, one from the greater Dunedin area, and three in the suburbs. NZDep2013, a measure of socioeconomic deprivation, divides all of New Zealand into deciles (Atkinson *et al.* 2014). Decile 10 is an area that is the most deprived, while Decile 1 is the least deprived. The pharmacies in this study were located in areas with Decile 3, 5, 7, and 8 designations. The intention of the research team was to meet with the staff in each



pharmacy to explain the project and what they might say to the potential participant-patients, including alerting them to the questionnaire. While it was possible to speak with the lead pharmacist about the project, none of the pharmacies had the time for us to meet with their staff to explain the project. A total of 363 OHPs were delivered to the participating pharmacies and 282 were delivered by the CPs to participant-patients (Table 1).

Community pharmacists reported two important challenges in this process. First, distinguishing between patients who had heart disease or who had experienced a stroke by the medication prescribed was very difficult, as the medications were essentially the same. Thus once the CPs had distributed the initial packs, they did not request any more stroke OHPs, and one pharmacy (P5) returned half their allocation to the research team. We had only intended producing two pamphlets, one specific to heart disease and one specific to diabetes. The third (stroke) was developed at the request of the focus groups (Morgaine *et al.* 2015). This suggests that the original two pamphlets would be adequate. Second, the OHPs took up a lot of storage space within the pharmacy. "We like it as an idea, but those packages take up too much space." (CP). This was a common complaint, even when the research team only delivered 10 of each type at a time. A pamphlet by itself could have been inserted into the pamphlet stands already present in community pharmacies, however, the OHPs required new storage space. A further challenge to the management of the intervention was the time it took for the research team to assemble and deliver the OHPs and the follow up with the community pharmacies.

Scientific Assessment

Participant-Patients

The return of the questionnaires was variable across the different pharmacies and from the differently focused OHPs (Table 1). A total of 99 questionnaires (35.1%) were returned. This relatively low response rate may be because follow-up of participant-patients was not possible. Of those questionnaires returned, 39 were from patients with diabetes and 59 from those with heart disease. Only one questionnaire was returned from a patient who had experienced a stroke. Almost all participant-patients were New Zealand European with one Māori participant patient, and eight from other countries. Ages ranged from 31 to 92 years old, with almost two-thirds in the 60-79 age range. Three people were over 90 (Table 2). Dental attendance in the previous year was considerably higher than the New Zealand average (68% cf <50%)(Ministry of Health 2016) with most attending for a check-up (Table 3).

Potential Impact of the Oral Health Packs

A large majority of participant-patients reported that they found the pamphlet useful and had used the pack, while about half indicated they had used the prompt-to-action plan embedded in the pamphlet to change or modify cleaning their teeth. Many thought the community pharmacy was a good place to be given the information, and just over half had not known of the association of NCDs with oral health (Table 4). There were no statistically significant differences of response by age, sex, or time of last dental attendance on any of these. However, there is some indication that those who

Table 1. Oral Health Packs: delivery, distribution and return of questionnaire

PACK FOCUS	PHARMACY:	1	2	3	4	5
Diabetes	Delivered	30	20	30	40	20
	Distributed	30	20	29	21	8
	Questionnaire returned	7 (23.3%)	6 (30.0%)	19 (65.5%)	4 (19.0%)	3 (37.5%)
Heart Disease	Delivered	40	20	30	40	38
	Distributed	40	20	29	39	22
	Questionnaire returned	12 (30.0%)	5 (25%)	11 (37.9%)	16 (41.0%)	15 (68.2%)
Stroke	Delivered	20	10	10	10	5
	Distributed	19	10	10	3	5
	Questionnaire returned	0	1 (10%)	0	0	0

Table 2: Participant Patient Characteristics

Sex	N	Age in year groups	N
Male	53	30-35	1
		36-45	3
		46-55	9
Female	44	56-65	29
		66-75	26
Not stated	2	76-85	25
		86-95	5
		Not stated	1

Table 3: Dental Attendance

Time of last visit	N
Within the last year	68
1-2 years ago	15
3 or more years ago	13
Never attend	3
Reason for Attending Dentista	N
Check-up or recalled by dentist	74
Pain, loose or broken teeth or fillings	30
Gum care	16
Other	9
Never attend	3

^a Respondents could answer more than once

Table 4: Potential of the Oral Health Packs

Item	Response
Did you use the OHP?	Yes = 93
Was the pamphlet helpful?	Yes = 93
Did you know of the links between diabetes/ heart disease and oral health?	Yes = 45 No = 51
Did you use the plan embedded in the pamphlet to modify your teeth brushing/ cleaning?	Yes = 50 No = 43
Was it a good idea to get the OHP from a community pharmacy?	Yes = 96
Where is the best place to get the OHP? ^a	
Pharmacy	80
Doctor	20
Dentist	40
Support group	4

^a Respondents could answer more than once

attended the dentist in the previous year were slightly more likely to use the OHP (98.5% cf 90.3%); and that participants aged over 65 years were somewhat more likely to modify their oral hygiene practice (56.4% cf 40.0%) but less likely to know about the association of NCDs with oral disease (40.0% cf 56.4%). Regardless of the last time of dental attendance, more than half of all participants did not know about the association of NCDs with oral disease.

Feasibility Analysis

The OHP was a simple theory-based intervention utilising community pharmacies for distribution. The feedback from the participant-patients was very positive. The feedback from community pharmacists was less so. Participant-patients who returned their questionnaires were overwhelmingly in favour of the pamphlet and the information it provided indicating strong acceptability, with some indication of positive impact on modifying oral hygiene practice. It is not possible to tell from this feasibility study which aspect of the OHP was effective. From the CPs' perspective the primary challenges involved practicality (to what extent can a programme be delivered without outside intervention?) and integration (to what extent can a programme be integrated within the existing system?) (Bowen *et al.* 2009). From a practicality perspective, the provision of free oral hygiene products by Colgate®, along with the intensity of study personnel contact with pharmacies are not possible on an ongoing basis. While giving oral health advice is usual for CPs, the OHP could not easily be integrated into practice. The pamphlet within the OHP is similar in size to the General Pharmacy Council (NZ) pamphlets, so it is possible that the study pamphlets alone could be easily accommodated in the future.

Discussion

While community pharmacists continue to indicate that giving oral health advice is part of their role, and participant-patients found the OHPs useful, the practicality of having packs of oral hygiene products

is limited. Sturrock *et al.* (2017) reported that the oral health information pilot in Durham was very promising, both from the community pharmacists' and the participants' perspectives. The participant-patients in both Durham and Dunedin were very positive about the intervention they received, and the majority considered the community pharmacy as a good place to receive oral health information. Unfortunately it was not possible to separate the impact of the different elements in the Dunedin intervention. The Durham study was considerably larger than our study, with just over 1000 participant-patients from five pharmacies. During their one-on-one intervention discussions, all participants completed a questionnaire which focused on the outcomes of improved oral health knowledge and an intention to change. In contrast, the Dunedin study did not include any particular discussion with participants but did provide theoretically- and evidence-based information along with oral hygiene products. The Dunedin questionnaire was completed after the intervention and included self-reported behaviour change with half the participants indicating they had modified their oral health hygiene practice. This is an important distinction to make. Health promotion interventions are well known for improving knowledge about issues and attitudes toward change; however, changing behaviour is considerably more difficult (Kelly and Barker 2016). The Dunedin study suggests that behaviour change is possible even with a limited intervention.

The Durham CPs' response to participation was in stark contrast to our study. The Durham community pharmacies were enthusiastic about their role in the distribution of oral health information and supporting materials, and the place of interprofessional practice. This may have been because of the formal training they received prior to the intervention commencing, or to the active interactions with participant-patients. The Dunedin community pharmacies found storage of the OHPs challenging, and were not able to make time for any training or information sharing with the research team, despite the offer of training/information as formal continuing professional development for pharmacists.

Conclusions

The Dunedin OHP intervention tested the feasibility of using community pharmacies to distribute oral health information for those patients whose oral health may be at risk as a result of the NCDs they have. In its current form the Dunedin OHP intervention is not feasible. It does not have the support of the community pharmacists, in that it was challenging to identify the correct participant-patients and the storage of the OHPs was difficult. The lessons learned from this feasibility study suggest two possible recommendations for future practice and research. It may be feasible to place the pamphlets alone in the stands that community pharmacies already have. Half the participant-patients indicated they had modified their oral hygiene practice as a result of the pamphlet. Interprofessional education to improve the quality of care has grown in importance in the past 20 years (Barr 2002; Reeves *et al.* 2016; World Health Organisation 2010). Community pharmacists had previously indicated



that they would be interested in continuing professional development (CPD) around oral health. Given that it was not possible to meet with them and their staff on their premises, a future CPD session could be included in their regular professional meetings before the pamphlet was shared.

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