

Supplementary Material

Community pharmacy service provision to adults with palliative care needs in their last year of life: a scoping review

Sheng-Ting Chiu^{A,}, Trudi Aspden^A and Shane Scahill^A*

^ASchool of Pharmacy, Faculty of Medical and Health Sciences, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand

*Correspondence to: Email: sheng-ting.chiu@auckland.ac.nz

Supplementary file – Table 1 A summary of the studies included in the scoping review

Reference number: Key citation details (author, year, country, title)	Study aim/Objectives	Study and/or care setting and the population studied	Study design and sample size	Pharmacy activity or intervention	Study Results	Study Implications	Study Limitations
28: Needham et al., 2002, UK <i>Evaluation of the effectiveness of UK community pharmacists' interventions in community palliative care</i>	Assessing the effectiveness of pharmacy interventions	Primary care setting Community pharmacists	Non-randomised cohort study. 130 interventions made by 15 pharmacists.	Clinical intervention	81% of pharmacy interventions were judged as likely to be beneficial	Personal palliative care pharmacy services are feasible when a community pharmacist is included in the multidisciplinary palliative care team –	Subjective nature of the panel assessment. No evaluation of the user perspective. Part industry-funded.
29: Lucey et al., 2008, Ireland. <i>Access to medications in the community by patients in a palliative setting</i>	Assessing medications	Primary care setting Patients from specialist palliative home care services, retail pharmacists, GPs and home care nurses.	Mixed methods	Medication supply	System analysis presents the perspectives of the stakeholders within this system.	Pharmacy stock issues and communication among stakeholders within the system require improvement.	Only one of the home care teams was surveyed. Difficult to make conclusions about the patient/family perspectives.
30: Atayee et al., 2008, USA <i>Development of an ambulatory palliative care pharmacist practice</i>	Integration of a palliative care pharmacist into a multidisciplinary palliative care team	Primary care setting Patients from the specialist centre and the clinical pharmacist.	Pilot program evaluation 29 new patients who had 114 clinic visits were consulted by the pharmacist within the 7-month study period.	Palliative care pharmacy consultations by one clinical palliative care pharmacist.	Primary care oncologists accepted 98% of medication recommendations. The most common reason for referral to a pharmacist was for pain management.	Effective symptom management and high acceptance rates of pharmacist recommendations by primary care oncologists.	Patient outcome and satisfaction were not included. Relatively small sample of patients and only in one setting.

<p>31: Ise et al., 2010, Japan</p> <p><i>Role of the community pharmacy in palliative care: a nationwide survey in Japan</i></p>	<p>To evaluate the role of the community pharmacy in palliative care in Japan</p>	<p>Primary care setting</p> <p>Pharmacies in Japan participated</p>	<p>A nationwide anonymous postal survey. Sent to 3000 randomly chosen pharmacies out of 47,186 pharmacies in the country.</p>	<p>Supply of narcotics and medication counselling</p>	<p>Response from 1036/3000 community pharmacies (34.5%)</p>	<p>Problems with strict control of narcotics in Japan</p>	<p>Low response rate</p>
<p>32: Wilson et al., 2011, USA</p> <p><i>Impact of pharmacist intervention on clinical outcomes in the palliative care setting</i></p>	<p>To measure the impact of a pharmacist intervention on clinical outcomes of palliative patients.</p>	<p>Secondary care setting</p> <p>Clinical pharmacists</p>	<p>Quantitative analysis</p>	<p>Medication interventions</p>	<p>High physician acceptance rate of pharmacist recommendation (89.4%).</p>	<p>Acceptance of pharmacists' recommendations was high in this palliative care setting and is associated with the patient achieving the desired clinical outcome.</p>	<p>Pharmacist reviewer bias</p>
<p>33: Hussainy et al., 2011, Australia</p> <p><i>Piloting the role of pharmacist in a community palliative care multidisciplinary team: an Australian experience</i></p>	<p>To pilot and evaluate a model of care that supports the role of a pharmacist in a community palliative care team (CPC)</p>	<p>Primary care setting</p> <p>A specialist palliative care service in the community.</p> <p>The project team, patients, and staff.</p>	<p>Mixed methods</p>	<p>Clinical pharmacy activities</p>	<p>All online survey respondents felt the pharmacist role was helpful.</p>	<p>Including a pharmacist in the CPC team greatly benefits the CPC team.</p>	<p>Patients and carers were not surveyed.</p>

<p>34: O'Connor et al., 2011, Australia</p> <p><i>Exploring the community pharmacist's role in palliative care: Focusing on the person not just the prescription</i></p>	<p>To explore community pharmacist's role in palliative care</p>	<p>Primary and Secondary care settings</p> <p>Pharmacists, GPs, palliative care nurses, and carers of palliative care patients</p>	<p>Multiple qualitative case study designs</p>	<p>Communication with patients, carers, and families.</p>	<p>The study suggested varying perceptions about pharmacists' communication skills and identified the need for continuous professional development in communication skills among community pharmacists.</p>	<p>Effective communication promotes the role of pharmacists, and a consistent education framework for tertiary education and CPD for current pharmacists was recommended.</p>	<p>A small sample of carers of palliative care patients and no patients were recruited as participants.</p>
<p>35: Akram et al., 2012, UK</p> <p><i>Effective delivery of pharmaceutical palliative care: challenges in the community pharmacy setting</i></p>	<p>Supporting the development of Macmillan pharmacist facilitators and evaluating the effectiveness of this new service</p>	<p>Primary care</p> <p>Community pharmacists from the palliative care network meeting.</p>	<p>Qualitative study</p>	<p>Clinical pharmacy activities</p>	<p>The study focuses on the challenges and outcomes faced by community pharmacists.</p>	<p>Addressing unfamiliar medicine issues and improving communication between care settings is crucial.</p>	<p>Participant selection was only for CPPC network pharmacists with more palliative care knowledge than non-network pharmacists.</p>
<p>36: O'Connor et al., 2013, Australia</p> <p><i>Community pharmacists' attitudes toward palliative care: An Australian nationwide survey</i></p>	<p>To explore community pharmacists' attitudes, beliefs, feelings and knowledge about palliative care</p>	<p>Primary care setting</p> <p>Randomly selected community pharmacists</p>	<p>Cross-sectional descriptive survey</p>	<p>Community pharmacists' attitudes towards the service provided</p>	<p>The more positively community pharmacist rated their beliefs, the more positive their overall attitude was, and similarly, the higher the pharmacists' score on the knowledge test, the better their overall attitude</p>	<p>Addressing pharmacists' emotional concerns and building appropriate communication skills is crucial to their effective involvement in palliative care.</p>	<p>Low response rate and potential respondent bias due to the sample comprising mainly pharmacists interested in palliative care.</p>

					towards palliative care.		
37: Savage et al., 2013, UK <i>'Like doing a jigsaw with half the parts missing': Community pharmacists and the management of cancer pain in the community</i>	To explore and describe community pharmacists' current and potential place in the cancer pain pathway	Primary care setting Community pharmacists	Semi-structured interviews	Dispensing and medication counselling	Challenges encountered were a lack of a clear definition of the pharmacist's role in the provision of palliative care.	Strengthening communication channels between pharmacists and, other care professionals, and patients is essential for coordinated patient care.	The interviewer effect may have taken place.
38: Tait et al., 2013, Australia <i>Community pharmacists: a forgotten resource for palliative care</i>	To assess the availability of palliative care medicines in community pharmacies	Primary care setting Community pharmacies in South Australia	Postal survey in South Australia with a response rate of 23.7 %.	Medication supply function	Each pharmacy stocked a median of 3 out of 12 meds from the list. 12.3% of pharmacies had none of the medicines on the list. 1 in 5 community pharmacies acknowledged that they learned about a palliative patient from another health practitioner.	The study suggested - certain pharmacies stock a small range of medicines to support others in the region, -encouraging consistent prescribing patterns -emphasising the need for improved communication and coordination	Low response rate. The list of medications originated from an inpatient setting and was not reflective of essential medicines in the community setting.

<p>39: Maidment et al., 2016, UK</p> <p><i>A qualitative study exploring medication management in people with dementia living in the community and the potential role of the community pharmacist</i></p>	<p>To explore medication management in people with dementia</p>	<p>Primary care setting</p> <p>People with dementia, informal carers and GPs, nurses, social care professionals and community pharmacists.</p>	<p>Snowball sampling.</p> <p>31 participants, including 11 informal carers, 4 individuals with dementia, and 16 healthcare professionals.</p>	<p>General medication supply role of community pharmacies</p>	<p>Informal carers often experience emotional challenges.</p> <p>Participants, especially informal carers and people with dementia, tended to view pharmacists' roles primarily as supplying medications to organising pills.</p>	<p>Improving care coordination with ongoing support with a focus on the informal carer and medication review at home could be helpful. Community pharmacists need to work within a more multidisciplinary environment outside the pharmacy.</p>	<p>Findings are context-bound to the participants and study settings.</p> <p>Participants may have given socially desirable responses.</p>
<p>40: Akram et al., 2017, UK</p> <p><i>Developing a model for pharmaceutical palliative care in rural areas – experience from Scotland</i></p>	<p>To develop and evaluate a model for pharmaceutical palliative care in rural Scotland via the MacMillan Rural Palliative Care Pharmacist Practitioner (MRPP) project.</p>	<p>Primary care setting</p> <p>Stakeholders include one patient, one carer, GPs, nurses, social workers, ambulance services and NHS management.</p>	<p>Two phases:</p> <p>Phase 1 – mixed case study</p> <p>Phase 2 – integration of MRPP into different care settings.</p>	<p>Clinical pharmacy service</p>	<p>The MRPP's role was to improve medication access, the provision of personalised care with specialised medication expertise, and to develop the educational materials for care homes' staff.</p>	<p>Successful delivery of the model is dependent on the alignment of resources, infrastructure, and local community support.</p> <p>A more hands-on, person-focused and convenience-based service seems most suitable for this remote community.</p>	<p>Specific rural settings described, and funding streams sourced may not be duplicable in a different setting.</p> <p>Because of the rural setting, the participant number is small.</p>
<p>41: Tait et al., 2017, Australia</p>	<p>To report the perspectives of specialist and</p>	<p>Primary care setting</p>	<p>Purposive sampling for three semi-</p>	<p>Medication supply function</p>	<p>Six themes were identified, including medication supply,</p>	<p>Recommendations from the study were:</p>	<p>A weakness of the study design is the value</p>

<p><i>Improving community access to terminal phase medicines in Australia: identification of the key considerations for the implementation of a 'core medicines list</i></p>	<p>generalist health professionals on the issues of community access to medicines for people wishing to spend their last days of life at home.</p>	<p>Doctors, nurses and pharmacists from both specialist and generalist palliative care settings</p>	<p>structured focus groups –16 participants – six doctors, six pharmacists and four nurses. (8 in generalist field).</p>	<p>of community pharmacies.</p>	<p>education and training, caregiver burden, safety, funding, and clinical governance.</p>	<p>-to recognise the value of partnership -to ensure the sustainability of service -to recognise the multidisciplinary nature of palliative care services</p>	<p>placed on theme frequency, with no measure of emphasis or duration of discussion.</p> <p>Patients and caregivers were excluded from the study.</p>
<p>42: Cortis, 2017, Australia</p> <p><i>A qualitative study to describe patient-specific factors that relate to clinical need for and potential to benefit from a medication management service in palliative care</i></p>	<p>To identify which types of community-based palliative care patients benefit from medication management review</p>	<p>Primary care setting</p> <p>Patients were from the GP database.</p>	<p>Thematic analysis of a case series of 15 medication reviews from one GP practice.</p>	<p>Clinical pharmacy medication services</p>	<p>4 patient categories were identified to benefit from a medication review service: (1) with a chronic disease as well as terminal cancer, (2) experiencing ongoing generalised symptoms, (3) having existing or anticipated problems with swallowing or digestion, and (4) having a recognised fall risk.</p>	<p>Delivering the best outcomes for palliative care patients requires models of care that support communication and collaboration across the entire healthcare team and facilitate trusting therapeutic relationships between pharmacists and patients.</p>	<p>Low number of pharmacist referrals.</p> <p>No attempt was made to quantify the level of benefit realised from a medication review.</p>
<p>43: Edwards et al., 2017, UK</p>	<p>To explore the views and experiences of patients with</p>	<p>Primary care setting</p>	<p>A qualitative method of semi-structured</p>	<p>A range of community pharmacy</p>	<p>6 out of 13 participants were not under specialist</p>	<p>There is a need for pain medicine support for patients</p>	<p>A small sample was used in this study.</p>

<p><i>How do patients with cancer pain view community pharmacy services? An interview study</i></p>	<p>advanced cancer regarding community pharmacies, their services and their attitudes towards having a community pharmacist pain medicines consultation</p>	<p>Purposive sampling of patients using GP clinical information system.</p>	<p>interviews was used. Thirteen patients were recruited.</p>	<p>services, including medication supply, review and counselling.</p>	<p>palliative care services. Patients lacking specialist palliative care seemed less adept at managing their pain and lacked timely access to advice during worsening symptoms.</p>	<p>with advanced cancer. Patients were receptive to community pharmacist consultations.</p>	<p>Views of patients with very advanced diseases are not included.</p>
<p>44: Kuruvilla et al., 2018, Australia <i>Medication management for community palliative care patients and the role of a specialist palliative care pharmacist: a qualitative exploration of consumer and health care professional perspectives</i></p>	<p>To explore stakeholders' perspectives of the gaps in the current model of community palliative care services in relation to medication management and to describe their opinions about the role of a specialist palliative care pharmacist in addressing some of those gaps.</p>	<p>Primary care setting. Health care professionals from specialist community palliative care (CPC) settings with 1 GP and two community pharmacists in this cohort. 8 patients and carers were purposively chosen from the CPC database.</p>	<p>A qualitative design with three focus groups involving 20 stakeholder participants.</p>	<p>Pharmacy services include medication supply, access, optimisation and safety.</p>	<p>Five themes emerged: Access to resources, medicines, and information; shared care; challenges of polypharmacy; informal caregiver needs and potential roles of a palliative care pharmacist.</p>	<p>The study underlines the need for improved access to medicines and resources, enhanced communication among care providers, better management of polypharmacy, increased support for informal caregivers, and the potential benefits of integrating a specialised palliative care pharmacist into the team to improve medication management in CPC settings.</p>	<p>Under-representation of junior palliative care doctors and GPs in the participant sample. Some of the health professional focus group representatives worked together, which may have influenced some of the opinions expressed.</p>

<p>45: Suzuki et al., 2019, Japan</p> <p><i>A nationwide survey of community pharmacist contributions to polypharmacy in opioid-using and non-using cancer patients in Japan</i></p>	<p>To gain insight into the current status of community pharmacist contributions and their effects on polypharmacy in opioid-using and non-using cancer patients.</p>	<p>Community pharmacists who are members of the Japanese Society for Pharmaceutical Palliative Care and Sciences.</p>	<p>Cross-sectional design.</p> <p>Online anonymous questionnaire survey with a 14.3 % response rate</p>	<p>Clinical pharmacy service</p>	<p>Pharmacists can reduce inappropriate medications and improve adverse drug reactions in cancer patients.</p> <p>The responders with higher confidence in palliative care showed a higher success rate for reducing inappropriate medications.</p>	<p>The study emphasises the expanding roles of community pharmacists in home health care and palliative care in Japan.</p>	<p>Low response rate.</p> <p>Respondents all belong to the same association, so they may already be motivated to improve polypharmacy.</p>
<p>46: Edwards et al., 2019, UK</p> <p><i>A community pharmacist medicines optimisation service for patients with advanced cancer pain: a proof of concept study</i></p>	<p>To determine whether community pharmacist medicine consultations for patients with advanced cancer pain are feasible and acceptable to patients.</p>	<p>Questionnaires to patients from both specialist and non-specialist palliative care backgrounds and community pharmacies closest to the GP practices were involved.</p>	<p>Face-to-face or telephone consultation service was provided.</p>	<p>Medication optimisation consultation service (Medicine Use Review MUR, or New Medicine Service NMS)</p>	<p>Pharmacist medicine consultations were able to identify a substantial number of DRPs.</p> <p>Even for patients under specialist palliative care services, unmet medicines-related needs can be identified by pharmacists.</p>	<p>The pharmacist consultations were feasible; most participants would recommend them to others.</p> <p>Community pharmacists were willing to carry out these services. However, they had confidence issues in accessing working knowledge.</p>	<p>17 out of 19 patient participants are already receiving specialist palliative care services. Hospice recruitment provided the majority of participants (18 out of 23 participants)</p>
<p>47: Miller et al., 2019, UK</p>	<p>To investigate the timeliness of access to palliative</p>	<p>Primary care setting</p>	<p>Mixed methods in two sequential phases (1)</p>	<p>Medication supply function in the</p>	<p>20% of patients accessing medications</p>	<p>The timeliness of access to palliative medications was</p>	<p>It was a small sample of</p>

<p><i>How timely is access to palliative care medicines in the community? A mixed methods study in a UK city</i></p>	<p>medicines from community pharmacies</p>	<p>Community pharmacies and GPs and community specialist palliative care team members.</p>	<p>prospective audit of prescriptions and concurrent survey (2) interviews with community pharmacists and other health professionals.</p> <p>Five community pharmacies were recruited and 11 healthcare providers</p>	<p>community pharmacy.</p>	<p>had to go to more than one pharmacy.</p> <p>Some health professionals see community pharmacists only in the supply role with the concern of confidentiality.</p>	<p>primarily related to a mismatch between the stock of medicines held by community pharmacies and the prescribed palliative medication.</p> <p>Participating in local commissioning services and better Pharmacy-GP collaboration enhance access.</p>	<p>participating pharmacies.</p> <p>Differences in the commissioning of access to palliative medicines within England means no standard service specification stating the outcomes to be measured.</p>
<p>51: Tait et al., 2020, Australia</p> <p><i>Factors affecting access to subcutaneous medicines for people dying in the community</i></p>	<p>To explore factors considered predictive of pharmacies carrying subcutaneous palliative medicines.</p>	<p>Primary care Community pharmacies</p>	<p>Quantitative method using a postal survey with a 30% response rate from 2440 community pharmacies mailed.</p> <p>The remoteness and accessibility of the pharmacies were quantified.</p>	<p>Preparedness of community pharmacy – by measuring the available stock of the recommended palliative medicines in each surveyed pharmacy.</p>	<p>Almost 1 in 5 community pharmacies stocked sufficient formulations to manage commonly anticipated terminal phase symptoms. Prepared pharmacies were 12.7 times more likely to be aware of palliative patients in their pharmacy.</p> <p>Predictors of preparedness include an awareness of palliative care patients in the pharmacy,</p>	<p>Planning and communication with community pharmacists early in the trajectory are essential when considering access to medicine. The study also suggests the need for standardised medicine lists, better communication between healthcare professionals and pharmacies, and anticipatory planning for</p>	<p>The study was conducted across two States in a resource-rich country with universal healthcare founded upon a network of community-based providers.</p>

					pharmacy location, number of pharmacists and services offered.	terminal phase symptoms.	
50: Tait et al., 2021, Australia <i>What is the community pharmacists' role in supporting older Australians with palliative care needs?</i>	To describe the community pharmacists' perceived role in providing services to community-dwelling older Australians receiving palliative care	Primary care setting Community pharmacies	A national cross-sectional questionnaire was designed and undertaken online with Australian community pharmacists using an eight-domain End of Life Directions for Aged Care (ELDAC) care model.	The services provided by dispensing and non-dispensing pharmacists include involvement with ACP, deprescribing, education/ counselling, and medication review services.	There was poor engagement in advance care planning. Two-thirds of respondents are likely to involve carers when providing advice. There was a poor response from pharmacists involved in the case conference.	Pharmacists in both dispensing and non-dispensing roles offer a broad range of services to older Australians receiving home care or residential aged care.	The questionnaire generated over 3800 impressions, but only 51 respondents completed the questionnaire.
49: Inderlall & Naidoo, 2021, South Africa <i>Role of pharmacists in the provision of palliative care services and support in South Africa</i>	To determine pharmacists' role in providing palliative care services in South Africa.	Primary and secondary care setting Registered community and hospital pharmacists practising in the Gauteng province. (360 community pharmacists and	A descriptive cross-sectional quantitative study was conducted among 540 community and hospital pharmacists. The response rate was 48.7% (n = 263).	Pharmacist activity covers knowledge, attitude, current role, future role and barriers to palliative care.	Pharmacists (72.2%) were already playing a role in palliative care. However, only 20.5% reported frequent involvement. Services provided included medicine supply (88.2%), side-effect/symptom management (82.1%), information sharing (60.8%), bereavement counselling (60.8%),	Pharmacists had a good knowledge (71.4%) and a positive attitude (61.5%) towards palliative care despite many health system barriers such as lack of training (91.3%), inadequate clinical experience (90.5%) and insufficient resources (77.2%).	The intended sample size was not reached. A slightly lower internal consistency or reliability for the 68 variables measured.

		180 hospital pharmacists)			treatment/care needs (57.4%) and spiritual support (52.1%) Most pharmacists (96.6%) wanted to participate in palliative care beyond medicine supply.		
52: Homann et al., 2021, Germany <i>Pharmacy technician's perception about symptoms and concerns of older patients visiting pharmacies: a cross-sectional study</i>	1) To investigate pharmacy technicians' (PT) impressions of older patients' geriatric symptoms and their palliative concerns, 2) to identify the extent of multidisciplinary collaboration	Primary care setting Participants were community pharmacy technicians attending lecturers organised by the Lower Saxony Chamber of Pharmacists.	Cross-sectional study using a self-administered questionnaire. In total, 361 out of 831 participants (43% response rate) responded the questionnaire, with 98% being female.	Pharmacy technicians are widely involved in counselling in Germany. Activities include medication and symptom management in the pharmacy.	The 5 most common symptoms recognised were pain, insomnia, restricted mobility, eye disorders, and constipation. The three most frequently addressed non-drug-related geriatric palliative concerns were mental strain, loneliness, and mourning. 85% of the PTs desired closer cooperation with general practitioners, 84% with nursing services and 39% with palliative physicians.	There is a need for PT training in geriatrics and palliative care. Multidisciplinary care concepts should include pharmacies because they seem to be a low-threshold contact point for older patients who need access to adequate care.	The study was regionally limited to Lower Saxony, Germany. It does not present data about actual PT counselling. Selection bias may be present. Participants were from a training workshop so they may be particularly motivated.
48: Latter et al., 2022, UK <i>Patient and carer access to</i>	To evaluate patient and carer access to medicines at the end of life within the	Primary care setting Participants were healthcare	Multiphase mixed-methods design, comprising a systematic	All aspects of medication management provided in the community by	The systematic review identified a lack of evidence on service delivery models and patient experiences of	Access medicines required considerable coordination work. The key issues were	Patient records lacked sufficient detail for timelines to be constructed. It

<p><i>medicines at end of life: the ActMed mixed-methods study</i></p>	<p>context of models of service delivery.</p>	<p>professionals delivering end-of-life care and patients living at home in the last 12 months of life and their carers.</p>	<p>literature review, an online questionnaire survey of health-care professionals, evaluative mixed-method case studies of service delivery models, interviews with community pharmacists and pharmaceutical wholesalers and distributors, and an expert consensus-building workshop.</p>	<p>pharmacies were described.</p>	<p>accessing medicines at the end of life. Other issues were the differences in medication access amongst service delivery models, complex coordination to facilitate the access process, medicine stock management in pharmacies, the prescription cost differences between services, and the difficult supply chain interface between community pharmacists and wholesalers.</p>	<p>relationships and team integration, diversifying the prescriber workforce, access to shared records and improved community pharmacy stock.</p>	<p>was also difficult to recruit commissioners of community pharmacy services and wholesalers and distributors.</p>
------------------------------------------------------------------------	-----------------------------------------------	------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------