

Role of Pharmacist in Different Palliative Care Models and Settings: A Review

By

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A thesis submitted to the School of Pharmacy in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy

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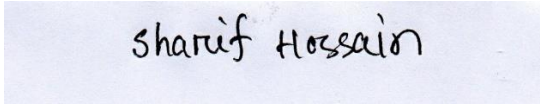
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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Approval

The project titled “Role of Pharmacist in Different Palliative Care Models and Settings: A Review” submitted by Md. Sharif Hossain (17346005) of Spring, 2021 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy on [Date-of-Defense].

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Ethics Statement

This study does not involve any kind of animal or human trial.

Abstract

Some distinct attributes such as symptom management, improve quality of life, manage psychological issues make palliative care an irreversible demand for terminally ill patients. For being an expertise about medication, pharmacist is a mandatory member of an interdisciplinary palliative care team. This review aims to demonstrate pharmacist's roles in different models and settings of palliative care. According to the study aim, universally known seven models and five settings found for palliative care where roles of pharmacist include symptom management, medication review, medication reconciliation, formulation, dispensing, education, counselling, and some administrative roles. The researches illustrate that pharmacists must be enrolled in palliative care as polypharmacy becomes mostly common for every terminally ill patient. This review is mentioning distinct roles of pharmacist's which are highly recommended for a patient receiving care in palliative care unit as well as structured information about the models and settings.

Keywords: palliative care; palliative care model; palliative care setting; pharmacist's roles; interdisciplinary team

Dedication

The work is dedicated to my parents for their continuous love and support

Acknowledgement

All praise is due to almighty Allah who bless me with wisdom and knowledge, good health and wealth. I am also thankful to Allah for blessing me with patience, strength, and assistance by which I have finished this project.

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Table of Contents

Declaration.....	ii
Approval	iii
Ethics Statement.....	iv
Abstract.....	v
Dedication	vi
Acknowledgement	vii
Table of Contents	viii
List of Tables	x
List of Acronyms	xi
Chapter 1 Introduction.....	1
Chapter 2 Methodology	7
Chapter 3 Findings and Discussion	8
3.1 Integrated Palliative Care Model.....	8
3.2 Consultation Model.....	9
3.3 Trajectory Model.....	10
3.4 Shared Care Model.....	10
3.5 Pop-up Model.....	11
3.6 Liaison Model.....	12
3.7 After Hours Palliative Care Model.....	13
3.8 Home Based Palliative Care.....	13

3.9 Hospital Based Palliative Care.....	16
3.10 Community Based Palliative Care.....	19
3.11 Residential Aged Care Facilities.....	22
3.12 Palliative Day Care Center.....	24
Chapter 4 Roles of Pharmacist in Palliative Care	26
Chapter 5 Discussion.....	30
Chapter 6 Conclusion.....	39
References.....	41

List of Tables

Table 1: Interventions of the different palliative care settings (Lockett et al., 2014)	33
Table 2: Common resources for palliative care (Canadian Hospice Palliative Care Association, 2013)	34
Table 3: Roles performed by pharmacists in different palliative care settings (Herndon et al., 2016; Krzyzaniak et al., 2016)	37

List of Acronyms

ASHP	American Society of Health-system Pharmacist
IPC	Integrated Palliative Care
WHO	World Health Organization
CPC	Community-based Palliative Care
RACF	Residential Aged Care Facilities
PHC	Palliative and Hospice Care
CHPCA	Canadian Hospice Palliative Care Association

Chapter 1

Introduction

Palliative care is referred as a patient and family centered care with the goal of maximizing the quality of life while anticipating, treating and minimizing the sufferings. The provision of palliative care coordinated by an interdisciplinary team includes care from different aspects such as physical, psychological, social, spiritual, cultural and ethical (National Consensus Project for Quality Palliative Care, 2013). In the context of making progress of disease, it is agreed that when the advancement of the disease reach to a stage that cannot be cured by treatment, only reducing the burden and morbidity of the disease on patient should be the most feasible option. As modifying therapy is no longer an accurate option of patient survival, palliative care exerts a medically active treatment to lessen the sufferings of a patient (National Advisory Committee, 1997)

According to Canadian Hospice Palliative Care Association, aims of palliative care include-

- Manage symptoms by treating all the active issues.
- Avert new consequences developed by the diseases.
- Develop chances for progress of significant and desirable experiences, personal and nonphysical growth, and self-actualization.

In details, palliative care is especially suitable for a person or family living at a situation where there is a likelihood of advancing a severe illness because of any diagnosis and anticipation. Palliative care may be capable to complement and improve disease modifying treatment or it can become the entire focus of care (Canadian Hospice Palliative Care Association, 2013). The dispensation and administration of palliative care must be designed only considering the patient's needs despite of age, gender, inherent status, sexual orientation, ethnicity, location

(Palliative Care Australia, 2018). Different guidelines, reports and frameworks by national and international institutions have mentioned phases or levels of palliative care according to patient's need. Though the name of the phases or levels mentioned in those of the guidelines are different, functions and attributes are quite similar. There are mainly three to four phases which discuss about care plan, staff requirement and complexity of needs in palliative care. The phases are as follows:

Phase-1 (Stable phase/ predictable phase/ primary level/ palliative care approach): Primary care providers are able to meet patients need. The providers need basic understanding of palliative care as an established plan of care is applied to manage patient's morbidity and symptoms. New issues are not faced in this phase and mental situation of family members remains stable. Additionally, patient's condition also remains stable and satisfactory with a little need of a specialist healthcare personnel. This phase is required in every setting of palliative care as 'Palliative Care Australia' guidelines recommended.

Phase-2 (Unstable phase/ intermediate and fluctuating phase/ Secondary level/ general palliative care): In this intermediate phase, sudden modification in the plan of care is required whenever a new issue is faced by the patient. In addition, a healthcare professional having training and experience in palliative care provide support to the care provider and patient. Involvement of the expertise in this phase is same as other healthcare professionals and at least part time involvement is required to meet expected benefit. This phase is also required in all type of palliative care settings.

Phase-3 (Deteriorating phase/ complex and persistent phase/ terminal phase/ specialist palliative care): This phase requires regular review, complex demand care and anticipated needs from the expertise as the patient's total health condition is worsening gradually. Though smallest volume of patient enters to this phase, involvement of specialist palliative care

providers are more than the other health care professionals to fill up the increased complex demands from the patients. This phase is required mainly for hospital palliative care settings like acute hospital setting, ambulatory care and tertiary palliative care bed (National Advisory Committee, 1997; Local Health Integration Networks & Quality Hospice Palliative Care Coalition of Ontario, 2011; Metro North HHS, 2017; Palliative Care Australia, 2018).

The patients who demand for palliative care may have a wide range of diseases. Palliative care is required for a large proportion of people facing chronic diseases like cardiovascular diseases (38.5%), cancer (34%), chronic obstructive pulmonary diseases (10.3%), AIDS (5.7%), diabetes (4.6%), kidney diseases (2.02%), and liver cirrhosis (1.7%). Moreover, patients with multiple sclerosis, Parkinson's disease, rheumatoid arthritis, neurological disease, dementia, congenital anomalies and drug-resistant tuberculosis also need palliative care. In the total distribution of people need palliative care 6% are aged 0-14 year, 25% are adults aged 15-59 year and 69% are adults aged 60+ year (World Palliative Care Alliance, 2014). Palliative care is often misunderstood as meaning only related to dying. However, relieving suffering through holistic and empathic care is an integral part of caring for all patients with life-threatening illnesses (Ting et al., 2020). For this reason, palliative care also discussed with importance for pediatric patients and pediatric palliative care is considered different from palliative care for adults.

Many children may in need of palliative care have life-threatening illnesses as counter to advanced end-stage illnesses. Life-threatening illnesses are illnesses in which there is no rational hope of cure and children will die through the illnesses. Many of these conditions get worse and the child becomes more and more dependent on the caregiver (National Advisory Committee, 1997). In recent times, the significance of palliative care in this COVID 19 pandemic is also recognized. A series of study where 101 COVID 19 inpatients were suggested

for urgent palliative care demonstrates that a large proportion of the patients died within 3 days (Janssen et al., 2020).

A palliative care model describes in details about the way palliative care service can be managed and administered. The components and resources of palliative care settings also defines elaborately about which model can be applied to the settings. The mentioned phases also require particular setting and model to be applied where proper palliative care will ensure optimum benefits for patients. Though there are some models which are not globally recognized in term of providing care and components, the models tend to help patients and caregivers without any proof of detrimental consequences (Brereton et al., 2017). The interconnection between the settings, models, and services as a significant factor affect efficiency and results of the care provided to patients. For example, all the palliative care settings ensure symptom control, increase quality of life, enhance patient satisfaction compared to regular health services as Lockett et al. (2014) highlighted. Lockett et al. (2014) also demonstrates literature-based outcomes where mostly mixed outcomes of different models and settings are gathered where the outcomes seemed to be different form each other according to settings and models. For instance, telehealth in community, hospital and residential aged care settings increases the access to health professionals with the use of low cost and short time; community setting for older people aged above 65 years old shows improved process of care and declined hospitalization rate but weak proof for cost effectiveness; home setting shows high satisfaction rate in pain and symptom control with lower cost (Lockett et al., 2014). Thus, it is clear that different way of services has effect on the outcomes and costs which is a remarkable concerning issue for most of the patient's family.

Pharmacists are considered as mandatory personnel where services are related with medications having a vast knowledge of drugs on pharmacology, pharmacokinetic and formulary. Services like palliative care where symptoms, side effects, polypharmacy is burning

issue for every moment highly needs a pharmacist in the health care team. Most importantly, all the government guidelines, frameworks also mention pharmacists as a compulsory member of an interdisciplinary palliative care team. ASHP guidelines mentioned that along with leading a palliative and hospice care team and administrative roles, pharmacist involvements and roles in palliative and hospice care also includes symptom and pain management, medication review, medication reconciliation. The guidelines also added timely medication administration, monitoring and reporting adverse drug reactions, providing education to patients and their families, laboratory data monitoring, prescribing, monitoring for drug-drug and drug-disease interactions as a part of direct patient care by the pharmacists (Herndon et al., 2016).

Studies have highlighted the importance of pharmacist involvement in palliative care team by mentioning the patient related outcomes. Pharmacist's intervention has enriched the quality of life and level of comfort through managing proper symptom control, suitable medication regimens and medication adherence of patients. Besides, the possibility of adverse drug effects, toxicities and use of unnecessary medications are decreased by pharmacist's recommendations (Krzyzaniak et al., 2016). For example, pharmacist's intervention in outpatient clinic have assisted to decrease antiemetics cost in 16% cost of cancer patients (Ma, 2014). 91% patients were found fully adherent to medication after the involvement of pharmacists on medication belief counselling as study mentioned (Birand et al., 2019). A retrospective analysis result of hospitalized patients for palliative care demonstrates that early access of pharmacist in the palliative care team significantly reduced total hospital LOS times (length of stay), LTC times (length from admission to palliative care consult), and CTD times (time from consult to discharge) (Atayee et al., 2018). After the intervention of pharmacist in palliative care, there is no allergies or adverse drug reactions recorded which founded for 24% cases before (Hussainy et al., 2011).

For most countries, needs and levels of healthcare services are associated with socioeconomic and regional factors. The increasing number of patients with life-threatening illness including the diversity and complexity of diseases require well organized and cost-effective palliative care according to the socioeconomic and regional demands (Evidence center, 2022). All the models and settings of palliative care may not be appropriate for a specific country but combining and managing components and resources of those models and settings according to demands will ensure better results for the patients. The discussion of the services of palliative care given by the models and settings will point out the necessity of component which is not included or applied by any organization yet. In addition, pharmacists are obtaining significant attention worldwide as important members of interdisciplinary palliative care team because of functioning irreversible roles in optimizing the quality of a seriously ill patient's life (O'Connor et al., 2011).

Aim of the study:

Therefore, the aim of this study was to find out proper model and setting established in the world for palliative care patients and necessary roles of pharmacist for these patients in specific phases of disease.

Objectives of the study:

The objectives of the study are to-

- i) explain the components, resources and services provided through the palliative care models and settings.
- ii) explore the roles of pharmacist in those models and settings worldwide.

Chapter 2

Methodology

Systemic searches were performed with search engines such as Google scholar, PubMed, BMC Palliative Care, Science Direct and random search in Google also performed to search relevant books, guidelines, framework of various organizations. For more related literatures, reference lists of included articles were searched individually. Common keywords related to palliative care model and settings were used during the period of literature searching to find more specific literatures. Keywords such as palliative care model, palliative care settings, pharmacist's role in palliative care, palliative care guidelines, elements of palliative care model, components of palliative care settings were used to find reviews that particularly discuss about palliative care models and pharmacist's roles. Though most of the literatures were review articles, a large proportion of data had been taken from guidelines and framework of different national and international organizations and institutions such as World Health Organization (WHO), Center to Advance Palliative Care, Australian Commission on Safety and Quality in Health Care, Canadian Hospice Palliative Care Association, Canadian Medical Association, Palliative Care Australia, etc. The classification or types of models were taken from particular articles to avoid overlapping among the models and settings. Roles of pharmacists among different settings were found mostly for both palliative care and hospice care. For this reason, the roles are applicable for both hospice and palliative care programs.

Chapter 3

Findings and Discussion

3.1 Integrated Palliative Care Model

Harmonization among different level of cares, health institutions and palliative care providers is called integrated palliative care (Mondejar-Pont et al., 2019). Management, supply, provisions, and services of different organizations are brought into relationship as WHO defines (WHO, 2004). Mostly described element for integrated palliative care is an interdisciplinary team which takes the responsibility for case management. Mondejar-Pont et al. (2019) mentioned that coordination and collaboration among care providers and health services is also remarkable element in this practice. The element of Integrated Palliative Care (IPC) that is associated with patients' physiological and psychological needs called patient-centered care. They also referred that as a distinct part, continuous care by the individual care providers and professionals should not be interrupted in this model. Most often introduced part for IPC is implementation of palliative care as early as possible and this requires early determination of a patient's need on palliative care. Special training and education about palliative care is necessary for the providers which is highlighted for IPC by authors. They further mentioned that a standard screening tool for the identification of patients need is mentioned for this model. A shared information system is an important facilitating element for IPC as it enhances collaboration and communication between caregivers along with continuum of care. Funding and resources for IPC model is compulsory element as studies mentioned (Mondejar-Pont et al., 2019). There should also be easy access to available and inexpensive medicines for providers. Researcher's recommendations for successful IPC are improvement of national policy, strategy development and funding as well as ensuring quality of care by improving infrastructure and raising awareness for mass people (Payne et al., 2019). Mondejar-

Pont et al. (2019) recommended that according to the definition, IPC model can be implemented in different settings such as hospital, clinic, home and community settings. This practice of care should be implemented mostly into community where patients may feel more comfortable and get more support from families than those of the hospital and clinic settings (Mondejar-Pont et al., 2019).

There are two types of approach named “The Gold Standard Framework” and “Liverpool Care Pathway” provide palliative care with mostly similar components like integrated palliative care. These approaches of care also presented as palliative care model in different settings. The components in “The Goal Standard Framework” are communication, co-ordination of care, control of symptom, continued support, continued learning, care givers and family support, and care in final days which are directly overlapped to the components of integrated palliative care model. Thus, these two pathways of service can be considered as integrated palliative care (Bartlett & Seager, 2012; Royal College of General Practitioners, 2013).

3.2 Consultation Model

Consultation model provides care planning and co-ordination, advice when critical medical decision is needed and the expertise who is not directly involved in the care settings also can provide recommendations. This model is practiced in hospital and clinical palliative care settings for both inpatient and outpatient services (Evidence center, 2022). Palliative care consultancy service is included as direct patient care by specialists or generalists in consultation model for inpatient care. Outpatient or ambulatory services in this model includes the initial assessment consultation for a patient who is recommended for palliative care (Palliative Care Australia (PCA), 2018). A guide for program managers by WHO reported that the palliative care consultation service is also eligible for the patients from other departments of same hospital using the same staff. WHO also remarks this service increase ability to form capacity

of other staffs in palliative care such as symptom management and consultation service also can add day-care service for inpatient and outpatient clinic to offer counselling of patients, symptom management, resting period for caregivers (World Health Organization, 2016).

3.3 Trajectory Model

Trajectory model suggests a way to support the patients with chronic illness and uncertain times of death or demand care over a long period. The supports include the patient discontinuous needs, ongoing simple or complex needs as well as focusing the care for palliation. This model provides timely advice to the patients and simultaneously gives curative treatment along with starting the care in early stage (Evidence center, 2022). Lynn et al. (2000) discusses that in trajectory palliative care model, care provider team apply strategies for disease management which includes teaching patients and caregivers about symptom stabilization. They also add that the purposes of the teachings are mainly for avoiding unnecessary hospitalization and preventing from worsening of illness. Besides, they report that the consultation service also ensures continuous availability of necessary medications, equipment such as oxygen and the patients also receive proper plan and decisions about treatment at the time of sudden severe situations. Finally, they suggest that This model is mostly preferable to patients with chronic heart and lung diseases and provides care in home based palliative care setting (Lynn et al., 2000).

3.4 Shared Care Model

Shared care model is a practice of planned delivery of care which involves in observing and sharing information between health professionals along with individual's responsibility for patient's care. This model was originated to extent services so that palliative care can be reached to rural adult services (Lockett et al., 2014). Chomik TA (2005) defines that shared care also called planned care or managed care which mainly gives attention to provide quality

healthcare by monitoring services and cost reduction, whereas, collaborative care is designed for mainly relationship building as the scientists differentiate share care from collaborative care. He also adds that all service providers in shared care must be involved in patient care through engaging to information exchange. In addition, the care providers must also share responsibilities, divide the roles and arrange regular meeting. He reports that these features of this model help the care providers to collaborate each other's knowledge, abilities and professional skills. As a part of patient management, shared care model includes patient and family in care planning and decision making. The working arrangement in shared care model is set up such a way so that proper patient care is ensured under all situations even if the key members are absent. He recommends that the model can be implemented in hospital, specialist clinic, home and community palliative care setting (Chomik TA, 2005).

3.5 Pop-up Model

Pop-up model is found applicable for pediatric palliative care which is first introduced to rural and remote area of Australia. This model is designed to be developed with the help of existing local resources and services to establish a cost-effective model. Thus, optimization of those resources develops this model to provide specialist pediatric palliative care to rural and remote communities (Currow & Tieman, 2005). Mherekumombe MF et al. (2016) highlighted a major element of pop-up model which is referred as 'just-in-time education and training' for the staff associated with local health. They added that the training acts on the development of capability and capacity within local care providers by covering the knowledge of symptom management, end of life care, individualized need of patients, bereavement support. Continuity of care can be ensured by these proper education facilities. Moreover, case conferencing using technologies like videoconference, teleconference is another remarkable component of pop-up model. These conferences for consultations have shown same effectiveness comparing with face-to-face conference in palliative care. Specialist pediatric palliative care through pop-up

model requires component named “developed comprehensive care plan” which provides enriched services to the community or tertiary based health clinics involved in child’s care (Mherekumombe MF et al., 2016). Pop-up service model in palliative care ensures comprehensive care implementation, specially to the child care and also provide networking opportunity among the hospital and community health service providers (M. Mherekumombe, 2018). NSW Ministry of Health (2012) remarks that a pop-up team model presents a specialist palliative care service which assists a local team of healthcare professionals. In addition, the special feature of this model marked by the scientists is immediate mobilization of the team beside the child and family at the time of illness and bereavement to provide essential support (NSW Ministry of Health, 2012). Finally, pop-up model can be applied to any setting of palliative care for delivering a specialist pediatric palliative care to small, rural and remote area populations (Mherekumombe MF et al., 2016).

3.6 Liaison Model

Liaison model is presented as nursing model and hospital care model in some research articles. Atriya S et al. (2019) defined that in palliative care, it is referred as home-based palliative care where collaboration between family physician or primary care physician and specialist have illustrates better results on symptom management, increased quality of life and enhanced patient’s compliance to pass the final hours of their life at home. Their recommended components to implement liaison primary palliative care at organization level include proper collaboration and communication between specialist and family physician or primary care physician, managing an open information center where PCP or FP can easily get information about palliative care and contact details of specialist, arranging web-based program for skill-based training. These suggested components are targeted mainly for the development of PCP or FP in palliative care (Atriya S et al., 2019). Liaison model and role of the liaison worker have showed effective palliative care for minority ethnic groups (Jack et al., 2001).

3.7 After Hours Palliative Care Model

A framework published by “Department of Health” of Victorian Government of Australia shows after hours palliative care model where patients in the community palliative care setting are served with nursing visit when required and also taken care about symptom management through phone calls to the care providers and families after the compulsory duty schedules. All other time out of business hour (7 am to 4:30 pm) is defined as after hours for this model as the guideline defines. The framework also includes that a unique component in this model named an electronic information system which is hosted centrally contains patients all kind of information including current condition and symptoms, medication plan so that specialist can easily review the patient’s information prior to speaking with patients and care givers. Care planning, after hours telephone service, after hours nursing support, after hours medical support, activity after a visit and quality assurance are mentioned as key components of after-hours palliative care service. They also remark, this model is mainly discussed to implement home based palliative care and community palliative care settings (Government & State Government of Victoria, 2012).

3.8 Home Based Palliative Care

Home-based palliative care is defined as a specialist palliative care which is provided to terminally ill patients in a setting called “home” by a patient and this can be a private residence, an assisted living facility, senior housing group home, skilled nursing facility, shelter or the street (Center to Advance Palliative Care, 2019). Kahveci et al. (2020) also defines home-based palliative care that it is also called an approach of care that supplies the necessities of the patients such as physical, psychological and moral needs at home in severe and chronic health problem. Further they include that the care is provided by an interdisciplinary team consisting of physicians, physiotherapist, nurses, volunteers, pharmacists, psychologist and other public

health care professionals who are trained for palliative care. In addition, full time support by a nurse and a physician for part time support are mentioned as mandatory requirement for home-based palliative care (Kahveci et al., 2020). Some literatures and palliative care frameworks have discussed home based palliative care programs as subset or part of community based palliative care setting but Hui & Bruera (2020) differ home setting from community setting as an individual care setting because community setting provide care by specialist palliative care team having more skill and experience in palliative care and end of life care compared to the interdisciplinary team of home settings (Hui & Bruera, 2020). A review illustrates that home-based palliative care is related to some factors such as lower possibility of a patient for being hospitalized, reduction of cost, home as the place of death for patient's compliance. In addition, families get more support and patients do not feel alone when the care is provided at home (Candy et al., 2011). 'Center to Advance Palliative Care' (2019) has mentioned the unique features that differentiate home-based palliative care from other settings. The features are as follows-

- This setting gives an independent work environment to the clinicians as they do not have to immediately response to the other team members.
- As clinician travel to patient's home to provide care, patient with high intensity need gets remarkable benefit by the reduction of the burden of travel. This travel burden is sometimes unbearable for the patients of rural areas.
- Laboratory tests and other diagnostics may not be easily available but physical evaluation and communication skills are used for assessment in this setting (Center to Advance Palliative Care, 2019).

Dunlop (1998) addressed the features that help to promote the home-based care are as follows-

- Maintaining regular contact between patient's family and the interdisciplinary team.

- The supports are available for anytime form the team according to patient's need.
- Pre-planned alternative place of care is managed as back-up option.
- Teaching to the families by team about severe symptoms and emergency need for hospitalization (Dunlop, 1998).

There are some key equipment and medicine that are recommended to be always available at home care kit. For example, (1) Stethoscope, Tongue depressor, Thermometer, Sphygmomanometer as medical equipment and supplies. (2) Aspirator, Nebulizer, Wheel chair, Bathroom chair as supporting equipment. (3) Tools such as Dressing materials, Cotton, Scissors, Gauze, Gloves, Plaster, Transfusion materials, IV infusion sets, Cannula and butterfly needle, Injector and needle, Aspirator probes, Urinary catheters, Bladder, Feeding tubes (4) Medicines for pain management, psychological symptom management, wound therapy, gastrointestinal symptom management, antibiotics and antifungal, and nutritional supplements (Kahveci et al., 2020).

Hassankhani et al. (2020) reviewed that most patients choose to take care at home setting where company of their family increase the comfort of patients. They highlighted research outcomes which remarks that patients and families are satisfied as well as clinical effectiveness is also high for home setting. For example, along with physical, mental, social, spiritual effects this setting also decreases the costs assigned with the care system. Another research reviewed by them illustrated that about 45% expenses reduced in home based palliative care through the intervention of palliative care team assimilated with the routine care group. They also included that home care setting reduces the duration of hospitalization and precludes re-hospitalization thus side effects and burdens of hospitalization are abated. Louise et al. (as cited in Hassankhani et al., 2020) found that the intensity of symptoms and dispiritedness declined through nursing interventions in palliative care in home for group of cancer patients which ultimately results in

improving physical health and quality of life. As a result, more control over the disease becomes easier for the care givers (Hassankhani et al., 2020).

3.9 Hospital Based Palliative Care

“Center to Advance Palliative Care” (2019) describes elaborately that hospitals are facing new challenges due to basic changes in the nature of recent world’s population. Chronic illness is changing the need for medical services as medical advancements are creating opportunities for individuals to live longer. They also mention that while acute treatment has always been the focus of hospital care, a remarkable proportion of patients now demand long-term management of several chronic conditions while many institutions are struggling to provide well-managed, high-quality treatment for patients with chronic and life-threatening illnesses as they are rooted in a health-care provision which is designed to serve acute care. They also add hospitals are attempting to overbear the health-care provision’s fragmentation in order to provide better service to meet these patients' needs and to combine episodic, acute-care services with whole-patient care that responds to continuous medical demands throughout time. Further remarks that leading hospitals are gaining capability through hospital-based palliative care programs to manage organized, essential, efficient care for patients with tertiary illness. As a result, palliative care is being organized by the number of community, academic, and faith-based hospitals which is increasing fast day by day with proven success (“Center to Advance Palliative Care”, 2019).

Subset of hospital setting found in most of the literatures named inpatient palliative care, outpatient palliative care clinic, acute hospital care which are mainly focused to provide quality palliative care service conducted by an interdisciplinary team. These subsets are also called service delivery model of specialist palliative care (Hui & Bruera, 2020). Meier & colleagues (2006) have founded that these delivery models share similar goals and aims but interventions

and services provided by the team are different. He has also revealed, at inpatient palliative care beds, patients with severe conditions receive care by the palliative care specialist where the purposes are to deliver highly concentrated bedside treatment, re-evaluation of multiple symptom burden, assist the patients and family members to interact comfortably as they are experiencing economic and mental decline or difficulty and also assure safe and accurate discharge as well as follow up process with maintaining a good communication with patient's family. He also discussed the three basic components of hospital setting which are evaluation and solution of patient's difficulties, communication among care providers about care planning and complicated decisions implementing, coordination of care. Further mentioned that apart from giving psychological support, mandatory target symptom stabilization must be performed through the following interventions:

- Regular and frequent formal evaluation to find out symptoms the patient is facing.
- Prescribing medication through skilled and experienced physician to ensure proper use of opioid analgesics, enhance the effectiveness of treatment for pain reduction, treat other wide range of regular symptoms such as nausea, fatigue, depression, dyspnea, bowel obstruction.
- Proficient management of medication with expertise anticipation to reduce side effects and manage symptoms (Meier, 2006).

Luckett et al. (2014) have suggested that specialist consultative service is extensively required in palliative care models conducted to both acute care setting and inpatient palliative beds of hospital setting. They also have showed a landmark study of US which illustrates that palliative care consultation services advance the quality of life along with creating survival chances for the patients with advanced lung cancer. The point of care a specialist consultative service focus to handle in palliative care are as follows:

- Consultation about aims and anticipation of the care.

- Follow documents of advance instructions.
- Conference about individual's advance treatment and intervention for pathological diagnosis.
- Providing extra support to patients and relatives.
- Proper planning for patient discharge.
- Management of the symptoms.

Finally, they reviewed the outcomes of consultative services by hospital palliative care team which include relieving the emotional distress, enhance satisfaction of both patient and care givers along with proper management of symptoms and improve quality of life. Besides, it is figured out that the services also provide cost saving outcome which is one of the most significant goals of palliative care (Luckett et al., 2014).

In terms of reducing the expenses, Hui & Bruera (2020) recommended the specialist palliative care team to act as connector between home care services and hospital care services which can provide the service to patients and the families without any interruptions (Hui & Bruera, 2020). As the team operate within the existing hospital system, these teams are quite affordable to manage. Because most areas of treatment within a hospital are exposed to the challenges associated with terminally ill patients and their families, expenses can often be shared across specialties (Hockley, 1999).

Now, Hui and Bruera (2020) referred that outpatient services of hospital palliative care setting demand few components and resources acute care and inpatient bed services but this program of setting provide care to maximum number of patients. They also addressed this setting as main setting for patient's early phase of care. Besides, acute care unit is available only in large

hospitals as it provides complex care like intensive care unit but outpatient care settings are available at stand-alone clinics, embedded clinics. In addition, telehealth care and enhanced primary palliative care centers also set opportunities to provide outpatient palliative care. They found that recently most of the available reports have suggested stand-alone clinics where care is provided by an interdisciplinary specialist palliative care team. According to the report, embedded clinic for outpatient palliative care manages both pc care team and oncology team at a time in the service of cancer patients. They also reviewed that less difference between embedded clinic and stand- alone clinic are found and attributes are not also fully clear which indicates similarity of these two setting and the enhanced primary palliative care is conducted to oncology clinic by only nurse practitioners where specialist palliative care team is absent (Hui & Bruera, 2020).

3.10 Community-based Palliative Care

Kamal et al. (2013) defined the term "community" from community-based palliative care (CPC) which refers to the collection of places where patients and their families live, work, play, and receive medical care, both permanently and temporarily. CPC is interrelated with all areas of the palliative care continuum, including hospice, inpatient consultative palliative care, and nonpalliative care as well as CPC is mostly similar to a comprehensive palliative care strategy, in which care is provided regardless of the patient's location, ailment, or prognosis (Kamal et al., 2013). "Palliative Care Australia" also defines community based palliative care as non-hospital palliative care. Thus, the diversity in the definitions and higher expectation make difficult to develop proper feature for an efficient and cost-effective CPC model.

Hui & Bruera (2020) reviewed that patient in nursing homes and skilled nursing facilities can get individual visits, materials, supplies telephone assistance through community-based palliative care programs. They found that patients in this setting are usually clinically stable,

with a low-performance status, low expectation about survival, and have an intention of receiving care at ambulatory clinics. Early engagement of community-based palliative care, like outpatient and inpatient models of palliative care, was linked to better outcomes. They also mentioned, palliative day-care services, which are more popular in Europe, are accessible in the community to provide physical, psychological, social, and spiritual support for patients (Hui & Bruera, 2020).

Kamal et al. (2013) recommended three major features which should be acted as the basis for its better outcome along with proper development. At first, 'Consistent Across Transitions' which emphasizes that services should be provided in a consistent manner throughout the frequent patient transitions that are expected in this population. They added that transitions could be disease related which means severe illness to life limiting illness and locational which mentions transition from home to institutional care. Regardless of changes in the healthcare profession, patients and families must be able to depend on consistent service administration which includes equivalent resources, knowledge and familiarity with in-person goals and needs. Next, prognosis-independent care should be provided by CPC along with the continuous period of severe illness as Kamal et al. (2013) mentioned. The care must be provisioned diverse population with palliative demands irrespective of anticipation, diagnosis, or stage in the disease trajectory. In this setting, selectivity for palliative care must not be restricted by prediction threshold by payer or the requirement of continued functional decline. They also found, the expanded selectivity will ensure palliative care to benefit the patients who demands hospice care including symptom and care provider related needs, passes the prognostic duration of care, require disease directed treatments. Finally, 'collaborative and coordinated' care which ensures an interdisciplinary team consisted of physicians, nurse practitioners, pharmacists, social workers, physician assistants providing effective palliative care by conducting regular multidimensional evaluations and implementation of comprehensive treatment plan. They

further suggested, a central clinician should be appointed by the team who will guide the patient during geographic transitions. The central clinician could be anyone who is experienced and skillful well equipped healthcare personnel such as family doctor, cardiologist, nurse practitioner, pharmacist. This setting promotes the coexistence of primary and specialist palliative care expertise (Kamal et al., 2013).

Same principles are also mentioned by other scientists which named these principles as person or family-centered care, comprehensive and coordinated care, shared decision making to meet patient goals. Moreover, the article highly recommended these principles for CPC program (Cohn et al., 2017).

Palliative care service development guidelines by “Palliative Care Australia” explained, to expand community palliative care accessibility, a variety of approaches may be necessary, including:

- The advancement of strategies, financing mechanisms, and other initiatives that directly support the timely provision of community-based palliative care.
- Improving the expanded focus of expert palliative care consultation support in community-based palliative care, which has generally been centered in hospitals, to provide additional help to healthcare workers providing care.
- Physicians, community nursing facilities, and providers of professional health services should broaden their refuse to deliver palliative care on an in-reach basis to persons living in various types of residential situations.

The guidelines also collected research that an Australian study illustrates half of the people die in hospital setting and rest half of the people die in community setting in palliative care

provisions. The study also represents that just over a third patient's transitions occurred between inpatient hospital bed and community setting. Thus, the provision of community setting must be well organized so that the demands of transferred patients from hospital can be fulfilled (Palliative Care Australia, 2018).

3.11 Residential Aged Care Facilities (RACF)

Palliative care is also provided through residential aged care facilities (RACF) though the delivery of palliative care in residential elderly care settings has been demonstrated to be particularly difficult (Luckett et al., 2014). Despite rising needs due to an expanded geriatric population, there is a scarcity of high-quality research on which components of palliative care are most beneficial to residents and their families (Hall et al., 2008). Palliative service in a RACF necessitates excellent collaboration among various providers, although barriers and facilitators for collaboration have been identified, proof of an effective integrated approach is sparse (S. L. Davies et al., 2011). Carpentar P. demonstrated studies that elderly people are less likely to be recommended to palliative care facilities for consultation, and their symptom management is likely to be poor (as cited in Evidence center, 2022). Communication tactics, integration of leadership teams and symptom managing policies were determined as significant elements of this setting as mentioned by a Cochrane study of palliative care interventions for elderly adults in aged care facilities (Hall et al., 2008). The European Association for Palliative Care published a White Paper (2020) that presents a framework of guidelines to support the administration of palliative care advancement in RACFs, based on the Palliative Care for Older People (PACE) study (Evidence Center, 2022). Twenty proposals are assigned to three different stages of administration sectors (inside an organization, across organizations, national/regional) and three phases of implementation in the framework (preparation, implementation, and sustaining change). The proposals include: (a) raising palliative care awareness, (b) cultivating a culture of continuous employee training with a commitment to

educational training programs and distribution of resources, and (c) implementing palliative care techniques with continuous support to integrate them into routine care (Kaasalainen, 2019).

According to a recent scoping analysis by Kaasalainen (2019), four main approaches of palliative care for use in residential aged care have been created and published in the literature:

1. An external expert end-of-life care approach in which a patient in the final stage receives palliative care from an external specialist palliative care team. This approach restricts all patient's access to high-quality palliative care, as well as palliative care before they reach the end of their lives. It also inhibits continuity of treatment. It has, however, been demonstrated to reduce admission rates in hospitals and improve relative's perceptions for the end-of-life care.

2. End-of-life care at home, where qualified aged care professionals give palliative care.

3. In-house capacity building as part of a palliative care strategy, in which professional aged care workers give palliative care to all residents, not only those in their final months. The following are the fundamental capacity-building practices: (a) developing leaders or champions, (b) educating all employees about a palliative care approach, and (c) conducting continuing checks to assess outcomes with a feedback system for continuous improvement. The assessment of this model revealed enhanced staff retention and family comfort, as well as fewer admissions in the hospital.

4. This is a mixture of the first and third models that combines internal capacity building with external assistance from palliative care experts. This model is harmonious with the Gold Standards Framework and has been related to reduced rates of unnecessary hospitalization, the use of palliative care case conferences and a care system, and greater rates of doctor appointments in the final week of life. Nurse practitioners or physicians, clinical nurse

specialists, hospice professionals, paramedics, or a combination of these can provide external help in this model.

As a result, all models required training and developing skills, particularly in the treatment of pain, dyspnea, exhaustion, anxiousness, dementia, nausea/vomiting, abnormal bowel function, oral care, and depression, as well as in the detection of worsening and actively dying patients. Capacity building aids in the change and advancement of practices and this can also include the formation of palliative care advocates within the RACF team, as well as regular reporting and case conferencing along with external assistance to supplement training (Kaasalainen, 2019).

3.12 Palliative Day Care Center

‘National Council for Hospice and Specialist Palliative Care Services’ defines palliative day care as a service that increases the independence and quality of life of patients through rehabilitative therapy, occupational therapy (evaluation of activities of daily living), physiotherapy (individualized exercise program), the treatment and control of symptoms, and the delivery of psychiatric help as reviewed by E. Davies & Higginson (2005). They found that patient need for social engagement, mental health support, respite for a caregiver, screening, symptom management, and evaluation seem to be the most typical referral factors recognized by day-care units. They also revealed, most patients were transferred directly from home-care teams or hospital units, and several did not have a waiting period. As a result, patients in day care were a particular group of people who were already getting palliative care. According to a small in-depth study of a single unit illustrated by E. Davies & Higginson remarked that nurses, the social activity organizer, and volunteers comprised a core team that had the highest interaction with patients, but they tended to concentrate on particular professional goals rather than common goals. They further mentioned that doctors conducted inspections,

communicated with patients' general practitioners, administered drugs and tests, and provided guidance on a daily or as-needed basis in the medical units of the care (E. Davies & Higginson, 2005). Kilonzo et al. (2015) discussed significant finding that complementary treatment, and dietetics are among the disciplines available to patients in palliative day care centers and the patients can also receive social worker assistance and participate in events such as art therapy, music therapy, and therapeutic horticulture. They also demonstrate some available services for day care centers apart from regular medication therapy which includes specialist dietary recommendations and modifications in lifestyle, tips on how to save energy and deal with shortness of breath, collaboration with local resources and organizations (Kilonzo et al., 2015)

Chapter 4

Roles of Pharmacist in Palliative Care

‘American Society of Health-System Pharmacists’ in their guidelines have stated that palliative and hospice care pharmacists must be comprehensively acquainted with symptom management and reduction (Herndon et al., 2016). The pharmacists have to assess any complain about symptom to suggest proper medication therapy. In some cases, pharmacists may have to prescribe medicine to treat pain and symptoms as a part of collaborative practice services (Walker et al., 2010). As an integral part of an interdisciplinary team, along with symptom assessment pharmacist has also roles in operating evaluation for drug therapy management and comorbid conditions to enhance the outcomes of symptom management (Herndon et al., 2016).

Medication review is one of the major roles of project pharmacist in community palliative care team as research illustrated (Hussainy et al., 2011). British Royal Pharmaceutical Society addresses medication review as a key role for pharmacist in every type of patient care setting. ASHP guidelines recommend that palliative and hospice care pharmacists should be closely involved in medication review of hospice admissions to evaluate appropriateness of ongoing medications. This review is for the assessment of each drug’s effectiveness, burden and compliance to administer according to each patient’s forecast. Medication review by palliative care pharmacist is also for paying particular attention to the determination of useless and non-essential treatment regimens, decline medication related problems and costs at the time of better outcomes (Herndon et al., 2016). Hussainy et al. (2011) reviewed research which shows the impact of medication review by pharmacist that enormous recommendations were accepted by prescribers after medication review which demonstrates the significance of medication review by pharmacist in palliative care. They also added that at home visits, project pharmacists mentioned the important impact of medication review during reassurance and education with other team member of care while managing medications (Hussainy et al., 2011). Medication

reconciliation is another irreversible role of PHC pharmacist along with medication review for demonstrating problems and advising proper solutions to medication related problems attached with symptom management (Herndon et al., 2016). Medication reconciliation is conducted by pharmacist to identify and overcome medication errors like wrong dose, duplications, elisions of necessary medications, interactions between drugs (Barnsteiner, 2008). Palliative care pharmacist take part in drug administration by recommending proper routes of administration and providing expert information for the use of multiple drugs when intravenous or subcutaneous administration is required. Dosage adjustment and patient specific dose regimen is recommended by pharmacist on the basis of patient's renal and hepatic condition as pharmacist have expert knowledge about drug's pharmacokinetic properties such as drug onset of action, duration of action, metabolism and excretion. Interpretation of laboratory data to get across drug serum levels and adjustment of therapy is vital role of palliative care pharmacist (Walker et al., 2010).

Pharmacist can raise instantly patient specific proper dosage formulations if appropriate market preparations are not usable (Walker, 2010). PHC pharmacist's expertise in compounding services has also significant role in providing help to PHC team and patients as compounded formulations assist the patients individually when commercial formulations and costs are matter of concern. Thus, the knowledge of pharmacists about medication compounding provides exceptional benefits for terminally ill patient (Herndon et al., 2016).

Palliative and hospice care pharmacists play particular roles on the education for caregivers, patients, and their families (Walker et al., 2010). Students, pharmacy, medical and nursing trainees along with other healthcare professionals are delivered education on palliative care by pharmacist (Atayee et al., 2018). These roles mainly include education about the proper uses and administrations of medications. The nurses are educated about recently approved drugs and their uses in palliative care (Walker et al., 2010). Education given to patients and families

assist to realize the necessity of particular medication use and also enhance the compliance for patients. Safe disposal of medications by families can be ensured with the education given by pharmacists (Herndon et al., 2016). Patients and families are also counselled about the harm of drug addiction, drug abuse, overdose associated with opioid use and concern them about complementary medication, myths, misconceptions (Walker et al., 2010). For these essential support, PHC pharmacist must be regularly involved in the education of caregivers, patients, families, clinicians of different settings (Herndon et al., 2016).

Monitoring or administrative activities of pharmacist in palliative care such as formulary organization (making purchases, inventory control, and storage), inspection about quality (i.e. medication use assessments), advancing departmental policy, managing the medication cost estimate, and participating in non-clinical meetings are frequently mentioned in the literatures. This was linked to the strong legal requirements governing pharmacy practice in hospices, which necessitate pharmacist intervention in medicine sourcing and recording. In the United States, hospice pharmacists were primarily responsible for administrative tasks such as the preparation of medication reimbursement applications and drug utilization evaluations (Krzyzaniak et al., 2016).

Communication with regulatory agencies and collaborate with employees to ensure adherence to regional, national, and federal medication management guidelines. Concerns about the risks of addiction, drug abuse, drug diversion, and overdose from opioid usage should be addressed with patients, families, caregivers, and staff by a palliative care pharmacist (Walker et al., 2010). According to ASHP guidelines, pharmacists who work in large medical institutions, clinics, and other organizations have more options to influence institutional medication-use policies. Besides, there are remarkable administrative roles in practice development, interdisciplinary leadership and management. These are as follows:

- Recommending for new and extended PHC medication services.
- Acting as an educational resource for healthcare personnel, patients, and patients' relatives on medication use in symptom control and palliative care.
- Participating in the establishment of emergency plans to overcome improper use of emergency department facilities or hospitalization (Herndon et al., 2016).

ASHP also mentioned that students, pharmacists, and health care professionals from other disciplines should be closely involved in the education and training of PHC pharmacists. PHC pharmacists participate in research to study and distribute findings through publications, poster presentations, and lectures (Herndon et al., 2016).

Chapter 5

Discussion

The interventions and settings for palliative care and hospice care is almost same but types of patients, goals of cares, duration of care show differences between hospice care and palliative care. Patients of any age who are suffering from life-threatening disease can be served in palliative care but hospice care focus only dying patients of any age. Hospice care is considered as subset of palliative care where patient do not receive any curative care and anticipation for six month's survival is requisite for receiving care in hospice care. In contrary, palliative care provides both curative and non-curative care where particular prognostic requirement is not necessary. The goal of hospice care is to enhance the quality of death and dying process where as palliative care aims to alleviate suffering while also enhancing the patient's quality of life and death. The interventions are same for both hospice care and palliative care which include collaborative pain and symptom stabilization, spiritual and psychological support, family support, and cooperation at migrations between care settings but bereavement support to families after the death of patient is performed in only hospice care (Guo, 2012; Lynn J. et al., 2000).

Another term called 'End of life care' which is same kind of care like hospice care where healthcare professionals and ancillary workers provide medical, spiritual, and behavioral assessments, as well as care and treatment. It also involves family and caregiver assistance, as well as after-death care for the patient's body but the difference is people are approaching the end-of-life care when prognostic requirement for survival is about 12 months (Australian Commission on Safety and Quality in Health Care, 2015). Thus, uniform settings and similar pharmacist's roles are mentioned for both palliative care and hospice care by ASHP guidelines.

Now, all the models of palliative care mentioned before share a common component which is collaboration among the healthcare personnel's and sometimes between patient's family and care providers according to different settings of care.

As quality palliative care requires group of healthcare personnel and care provider from different level and institution, collaboration and co-ordination bring optimum benefits for the patients and families. Among those models, shared care model is quite different in elements as it is originated to provide palliative care in rural areas with least resources. Pop-up model is also found as a unique model designed to provide pediatric palliative care. Some models are mainly organized to apply in hospital settings for better outcomes such as integrated model, consultation model, liaison model as these models provide care through experienced, trained and skilled healthcare personnel. Moreover, trajectory model, liaison model, and pop-up model are found least applied model in palliative care as these are organized to implement in particular region and purposes.

Different organizations and institutions focus on particular outcomes according to patients needs thus components and requirements for the models varies from each other. The models are delivered through the care settings where the proper arrangement for the environment set up is established to provide the care. The arrangement includes the resource, place, furniture, equipment, etc. The services provided to the different settings mainly depends on the resources and co-ordination between the healthcare personnel. For example, hospital setting for palliative care are capable to solve emergency complex issues within short time as the resources are very much available in hospital settings compared to other settings. On the contrary, patients of home settings show more satisfaction as the family members are near to them during care. Interdisciplinary team is mentioned in most models and settings as a compulsory component of care. "Australian Commission on Safety and Quality in Health Care" defines interdisciplinary team as a group of clinicians who collaborate to establish and implement a

treatment plan. Membership is reliant on the activities needed to assess and address the patient's, caregivers', and family's expectations and requirements. In addition, one or more physicians, nurses, social workers, spiritual counselors, pharmacists, and private caregivers may be part of an interdisciplinary team. Based on the patient's condition and the facilities available, other specialists may be included in the team.

The interdisciplinary team may also include hospital trainees, care recipients, caregivers, and relatives. It is found that an interdisciplinary team providing care at community and hospital settings and case conferencing, case management, and staff training are also found common in hospital, community, and residential aged care settings (Table 1). Allied health and complementary therapy are found to be applied in day care setting as well as individualized care (Table 1). Kilonzo et al. (2015) remarked that social support, occupational therapy and creative therapies are counted as main interventions rather than medication management in day care center because the patient enrolled in this setting mainly transferred from another palliative care service and settings. Lockett et al. (2014) discussed home based setting under community-based setting thus interventions for home-based setting did not separately mention in the literature.

Setting name	Interventions
Hospital setting (inpatient, outpatient and acute hospital)	Interdisciplinary support and advice, case management, case conferencing among healthcare professionals, care monitoring and planning, staff training, healthcare worker having specialist training, intervention with a hospital team.
Community setting	Interdisciplinary team, Integrated team model, group work, case management, social network and activity enhancement, telehealth, nursing support, case management, in home support, case conferencing, staff training, transition support, home nursing care, problem solving and education.
Residential aged care setting	Multicomponent care, nursing care management, staff training, telehealth, case conferencing, care plan, coordinated supportive cancer care.
Day care setting	Specialist palliative care, individualized palliative care, allied health and complementary therapy, medical and nursing care, social support.

Table 1: Interventions of the different palliative care settings (Luckett et al., 2014)

CHPCA mentions the resources for palliative care where resources are not categorized for particular setting rather common resources for all settings. The information and community resources mentioned in Table 2 may vary for hospital and community setting as these two settings found to require most collaboration and co-ordination compared to other settings.

Financial Resources	Human Resources	Information Resources	Physical resources	Community Resources
<p>Assets</p> <ul style="list-style-type: none"> • Cash • Capital • Investments • Receivables <p>Liabilities</p> <ul style="list-style-type: none"> • Payables • Depreciation • Taxes <p>Insurance</p>	<p>Formal caregivers</p> <ul style="list-style-type: none"> •Bereavement counselors • Chaplains • Dietitians •Integrative therapists • Nurses •Occupational therapists • Pharmacists • Psychologists • Physicians • Physiotherapists • Psychologists • Social workers • Speech pathologists • Support workers •Volunteers (caregivers) •Consultants (e.g., ethics, clinical, 	<p>Records</p> <ul style="list-style-type: none"> • Health • Financial •Human resource • Assets <p>Resources</p> <ul style="list-style-type: none"> •Resource, reference materials, (e.g., books, journals) •Internet, Intranet <p>Resource directory</p>	<p>Environment</p> <ul style="list-style-type: none"> • Space • Lighting • Heating, cooling • Utilities • Parking <p>Equipment</p> <ul style="list-style-type: none"> • Medical •Diagnostic and investigative • Office •Communication systems, (e.g., telephones, pagers, e-mail) •Information technology systems, (e.g., computers, printers, networks, internet access) 	<p>Host organization</p> <p>Healthcare system</p> <p>Partner healthcare providers</p> <p>Community Organizations</p> <p>Faith/religious communities</p> <p>Stakeholders</p> <p>Public</p>

	legal, administrative) Staff <ul style="list-style-type: none"> • Administration • Support Volunteers (non-caregivers)		<ul style="list-style-type: none"> • Security systems Materials, Supplies <ul style="list-style-type: none"> • Medical • Office • Other 	
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Table 2: Common resources for palliative care (Canadian Hospice Palliative Care Association, 2013).

Literatures showed that, in the interdisciplinary team, pharmacist is counted as a mandatory member of the team. National Advisory Committee also mentioned that all specialist palliative care units must have a trained and qualified pharmacist who consults and acts as part of the inter-disciplinary team (National Advisory Committee, 1997). The pharmacist should collaborate closely with the medical and nursing personnel where he provides supports and instructions on how to use medicines most effectively. Guidelines by CHPCA included pharmacists as formal caregiver in the human resources to support hospice palliative care (Canadian Hospice Palliative Care Association, 2013). The common interventions found for pharmacists in the settings are medication review, symptom management, anticipation and monitoring regarding adverse reactions and side effects of medications (Table 3). In hospital and community settings, follow up co-ordination and continuous liaising with other caregivers by pharmacists have significance for better outcomes of the care. It is clear that roles related to maintaining a proper supply of inventories for patients and building a relationship with patients are prioritized in community-based or home-based care settings. In addition, pharmacists in

community settings apparently followed up with patients after they were discharged from the hospital to make sure that they were properly taking their medicines. Krzyzaniak et al. found that the pharmacist's role in communicating productively with the team and providing ideas and suggestions for necessary modification to patient's drug regimens, such as whether to stop therapy, adjust doses, or replace medicines, is highlighted for hospital and community settings in the research conducted in the United States (Krzyzaniak et al., 2016). Curl & Oosterhof (2020) illustrates more specific data which mentions the percentage of different interventions performed by pharmacist and those are as follows:

- 21% interventions to start a drug for symptom management
- 21% interventions to stop a drug
- 4% interventions for enhancing medication adherence
- 11% interventions for optimizing doses
- 15% interventions in the choice of drugs
- 9% interventions in explaining side effects
- 9% interventions for drug switch
- Rest of the interventions for optimizing palliative sedation, solving reimbursement issues, optimizing route of administration, explaining mechanism of drug action.

They also demonstrated the individual interventions for inpatient and outpatient hospital settings where higher percentage of interventions were conducted for parenteral and non-

parenteral drug administration in inpatient setting compare to outpatient setting (Crul & Oosterhof, 2020).

Name of settings	Roles of Pharmacist
Hospital setting (inpatient, outpatient and acute hospital)	Medication review, pain and symptom management, modify treatment regimens, discontinuation and initiation of medication therapy, facilitate timely medication administration, monitoring and reporting adverse drug reactions, ensure safe use and mitigation for opioids, clinical support to the staff, organizing team conference, providing necessary information to the interdisciplinary team, providing education to patient and family, discharge and transition planning, follow up coordination of care between multiple providers.
Community setting	Medication review, symptom management, continuous liaising with other health professionals, ensure ongoing access to medication, providing education to patients and team members.
Residential aged care setting	Medication use documentation, managing the formulary, administrative roles
Home setting	Ensure rational use of drug to reduce medication cost, specific medication recommendations through a consultative process, coordinate transitions from hospital to home and home to hospital.

Table 3: Roles performed by pharmacists in different palliative care settings (Herndon et al., 2016; Krzyzaniak et al., 2016)

Krzyzaniak et al. (2016) reviewed pharmacist's roles according to different country where counselling patients, drug dispensing, medication review, medication reconciliation, consultation, participation in interdisciplinary meetings and conferences, monitoring and managing the symptoms and adverse drug reactions are found common roles for selected countries such as UK, USA, Canada, Australia, Qatar, Japan, Ireland, Mexico, Sweden, Poland (Krzyzaniak et al., 2016). From the discussed roles in chapter 4 we can divide the roles in three category such as symptom management, medication management, administrative where managing pain and symptoms, monitoring adverse drug reactions fall under symptom management. Medication review, medication history, medication reconciliation, preparation and dispensing, drug dosing and administration, prescribing, evaluation fall under medication management. Education to caregivers, managing administrative work, attending interdisciplinary meetings and conferences, developing formulary, involving in policy making, engaging in research works and counselling to patients and families fall under administrative roles.

Chapter 6

Conclusion

The emerging rate of cancer patients along with others who are facing life threatening illness remarkably hints the demand of palliative care. The organized models and settings for palliative care must ensure a better quality of life for patients. Besides, patients whom need polypharmacy service in palliative care is also significantly mentioned in this study. These irreversible roles and interventions by pharmacist are providing magnificent contribution to the interdisciplinary team for the betterment of patients. Though the elements and resources seemed to be very easy to discuss and identify, implementation becomes a challenge because of barriers related to policy, funding and infrastructure. As recent healthcare services highly focus on patient specific care, hospitals or institutions can combine multiple models or settings to meet the demands of patients and caregivers. The models also should be tailored before implementation so that individual's demands remain in the focus of care. Besides, there are variations in the palliative pharmacist's roles among the settings and these diversities have varied amounts of effect on results. This study outlined pharmacist's major interventions in palliative care and thus it should be taken seriously to mandatory inclusion of pharmacist in an interdisciplinary team of end-of-life care.

Limitation of the study: Remarkable heterogenicity in the definitions and name of the models and settings affects the differential discussion. The outcomes were found literature based rather than for individual models and settings. Thus, outcomes form all aspects were not possible to be discussed for a particular setting and model. Low evidence becomes barrier to demonstrate the cost effectiveness of the settings.

Future research plans: Disease specific palliative care model for upcoming days will be more beneficial for both the patients and caregivers as along with patients the number of diseases increasing day by day that requires palliative care. From my point of view, funding management and policy implementation has significant roles in palliative care services. Research on institutional policy will ease the implementation of palliative care.

References

- Atayee, R. S., Sam, A. M., & Edmonds, K. P. (2018). Patterns of Palliative Care Pharmacist Interventions and Outcomes as Part of Inpatient Palliative Care Consult Service. *Journal of Palliative Medicine*, 21(12), 1761–1767. <https://doi.org/10.1089/jpm.2018.0093>
- Atreya S, Patil C, Kumar R. Integrated primary palliative care model; facilitators and challenges of primary care/family physicians providing community-based palliative care. *J Family Med Prim Care* 2019;8:2877-81.
- Australian Commission on Safety and Quality in Health Care. (2015). *National Consensus Statement: Essential elements for safe and high-quality end-of-life care*. <http://www.safetyandquality.gov.au/wp-content/uploads/2015/05/National-Consensus-Statement-Essential-Elements-for-safe-high-quality-end-of-life-care.pdf>
- Barnsteiner JH. Medication Reconciliation. In: Hughes RG, editor. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 38. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK2648/>
- Bartlett, J., & Seager, L. (2012). Palliative care principles and pharmacy roles Principles and Pharmacy Roles. *Clinical Pharmacist*, 4(December), 317–319.
- Birand, N., Boşnak, A. S., Diker, Ö., Abdikarim, A., & Başgut, B. (2019). The role of the pharmacist in improving medication beliefs and adherence in cancer patients. *Journal of Oncology Pharmacy Practice*, 25(8), 1916–1926. <https://doi.org/10.1177/1078155219831377>
- Brereton, L., Clark, J., Ingleton, C., Gardiner, C., Preston, L., Ryan, T., & Goyder, E. (2017).

- What do we know about different models of providing palliative care? Findings from a systematic review of reviews. *Palliative Medicine*, 31(9), 781–797. <https://doi.org/10.1177/0269216317701890>
- Canadian Hospice Palliative Care Association. (2013). *A Model to Guide Hospice Palliative Care*. 24. <http://www.chpca.net/media/319547/norms-of-practice-eng-web.pdf>
- Candy, B., Holman, A., Leurent, B., Davis, S., & Jones, L. (2011). Hospice care delivered at home, in nursing homes and in dedicated hospice facilities: A systematic review of quantitative and qualitative evidence. *International Journal of Nursing Studies*, 48(1), 121–133. <https://doi.org/10.1016/j.ijnurstu.2010.08.003>
- Center to Advance Palliative Care. (2019). *Palliative Care in the Home: A Guide to Program Design*. Center to Advance Palliative Care. <https://www.capc.org/documents/401/>
- Center to Advance Palliative Care (2019). *A guide to building a hospital-based palliative Care Program*. Center to Advance Palliative Care. <https://www.capc.org/documents/399/>
- Chomik TA: A Report on Shared Care (Part of the Primary Health Care Shared Care Network Development Initiative). Vancouver: Provincial Health Services Authority; 2005.
- Cohn, J., Corrigan, J., Lynn, J., Meier, D., Miller, J., Shega, J., & Wang, S. (2017). Community-Based Models of Care Delivery for People with Serious Illness. *NAM Perspectives*, 7(4). <https://doi.org/10.31478/201704b>
- Crul, M., & Oosterhof, P. (2020). The oncology pharmacist as part of the palliative treatment team. *International Journal of Pharmacy Practice*, 28(1), 92–96. <https://doi.org/10.1111/ijpp.12583>
- Currow, D., & Tieman, J. (2005). *Phase One of the National Palliative Care Research Program Summary Paper*. April 2005.

- Davies, E., & Higginson, I. J. (2005). Systematic review of specialist palliative day-care for adults with cancer. *Supportive Care in Cancer*, *13*(8), 607–627. <https://doi.org/10.1007/s00520-004-0739-6>
- Davies, S. L., Goodman, C., Bunn, F., Victor, C., Dickinson, A., Iliffe, S., Gage, H., Martin, W., & Froggatt, K. (2011). A systematic review of integrated working between care homes and health care services. *BMC Health Services Research*, *11*. <https://doi.org/10.1186/1472-6963-11-320>
- Dunlop, R. (1998). *Delivering Palliative Care in Different Settings*. 121–135. https://doi.org/10.1007/978-1-4471-3069-7_9
- Evidence centre. palliAGED Home. (n.d.). Retrieved January 1, 2022, from https://www.palliaged.com.au/tabid/4502/Default.aspx?fbclid=IwAR3VcCvSPK9URAfGf_WtvoJ8B071Qu0L1XaM7znr0hJ4507t6M6PBZgmadg
- Government, V. S., & State Government of Victoria. (2012). *After-hours palliative care framework*.
- Guo, Q. (2012). An Evolutionary Concept Analysis of Palliative Care. *Journal of Palliative Care & Medicine*, *02*(06). <https://doi.org/10.4172/2165-7386.1000127>
- Hall, S., Davies, E., Frogatt, K., Higginson, I., & Kolliakou, A. (2008). Interventions for improving palliative care for older people living in nursing care homes. *Cochrane Database of Systematic Reviews*, *2*. <https://doi.org/10.1002/14651858.CD007132>
- Hassankhani, H., Rahmani, A., Taleghani, F., Sanaat, Z., & Dehghannezhad, J. (2020). Palliative Care Models for Cancer Patients: Learning for Planning in Nursing (Review). *Journal of Cancer Education*, *35*(1), 3–13. <https://doi.org/10.1007/s13187-019-01532-3>
- Herndon, C. M., Nee, D., Atayee, R. S., Craig, D. S., Lehn, J., Moore, P. S., Nesbit, S. A., Ray,

- J. B., Scullion, B. F., Wahler, R. G., & Waldfogel, J. (2016). Ashp guidelines on the pharmacist's role in palliative and hospice care. *American Journal of Health-System Pharmacy*, 73(17), 1351–1367. <https://doi.org/10.2146/ajhp160244>
- Hockley, J. (1999). Specialist palliative care within the acute hospital setting. *Acta Oncologica*, 38(4), 491–494. <https://doi.org/10.1080/028418699432031>
- Hui, D., & Bruera, E. (2020). Models of palliative care delivery for patients with cancer. *Journal of Clinical Oncology*, 38(9), 852–865. <https://doi.org/10.1200/JCO.18.02123>
- Hussainy, S. Y., Box, M., & Scholes, S. (2011). Piloting the role of a pharmacist in a community palliative care multidisciplinary team: An Australian experience. *BMC Palliative Care*, 10. <https://doi.org/10.1186/1472-684X-10-16>
- Jack, C. M., Penny, L., & Nazar, W. (2001). Effective palliative care for minority ethnic groups: the role of a liaison worker. *International Journal of Palliative Nursing*, 7(8), 375–380. <https://doi.org/10.12968/ijpn.2001.7.8.9008>
- Janssen, D. J. A., Ekström, M., Currow, D. C., Johnson, M. J., Maddocks, M., Simonds, A. K., Tonia, T., & Marsaa, K. (2020). COVID-19: guidance on palliative care from a European Respiratory Society international task force. *European Respiratory Journal*, 56(3). <https://doi.org/10.1183/13993003.02583-2020>
- Kaasalainen, S. (2019). *Palliative Care Models in Long-Term Care : A Scoping Review*. 8–26.
- Kahveci, K., Koc, O., & Aksakal, H. (2020). Home-based Palliative Care. *Bezmialem Science*, 8(1), 73–80. <https://doi.org/10.14235/bas.galenos.2019.3208>
- Kamal, A. H., Currow, D. C., Ritchie, C. S., Bull, J., & Abernethy, A. P. (2013). Community-based palliative care: the natural evolution for palliative care delivery in the U.S. *Journal of Pain and Symptom Management*, 46(2), 254–264. <https://doi.org/10.1016/j.jpainsymman.2012.07.018>

- Kilonzo, I., Lucey, M., & Twomey, F. (2015). Implementing outcome measures within an enhanced palliative care day care model. *Journal of Pain and Symptom Management*, 50(3), 419–423. <https://doi.org/10.1016/j.jpainsymman.2015.04.006>
- Krzyzaniak, N., Pawłowska, I., & Bajorek, B. (2016). An overview of pharmacist roles in palliative care: A worldwide comparison. *Medycyna Paliatywna w Praktyce*, 10(4), 160–173.
- Local Health Integration Networks, & Quality Hospice Palliative Care Coalition of Ontario. (2011). *Advancing High Quality, High Value Palliative Care in Ontario*. December, 1–86. http://health.gov.on.ca/en/public/programs/lhc/docs/palliative_care_report.pdf
- Luckett, T., Phillips, J., Agar, M., Virdun, C., Green, A., & Davidson, P. M. (2014). Elements of effective palliative care models: A rapid review. *BMC Health Services Research*, 14(1). <https://doi.org/10.1186/1472-6963-14-136>
- Lynn J, Schuster JL and Kabcenell A. *Improving Care for the End of Life: A Sourcebook for Health Care Managers and Clinicians*. Oxford: Oxford University Press, 2000.
- Ma, C. (2014). Role of pharmacists in optimizing the use of anticancer drugs in the clinical setting. *Integrated Pharmacy Research and Practice*, 11. <https://doi.org/10.2147/iprp.s40428>
- Medication review. Medication Review | RPS. (n.d.). Retrieved January 2, 2022, from <https://www.rpharms.com/resources/quick-reference-guides/medication-review>
- Meier, D. E. (2006). Palliative care in hospitals. *Journal of Hospital Medicine (Online)*, 1(1), 21–28. <https://doi.org/10.1002/jhm.3>
- Metro North HHS. (2017). *Palliative Care | Clinical Services Plan 2017-2022*. 2017–2022.

<https://metronorth.health.qld.gov.au/wp-content/uploads/2018/11/palliative-clinical-services-plan.pdf>

Mherekumombe, M. (2018). From Inpatient to Clinic to Home to Hospice and Back: Using the “Pop Up” Pediatric Palliative Model of Care. *Children*, 5(5), 55. <https://doi.org/10.3390/children5050055>

Mherekumombe, M. F., Frost, J., Hanson, S., Shepherd, E., & Collins, J. (2016). Pop Up: A new model of paediatric palliative care. *Journal of Paediatrics and Child Health*, 52(11), 979–982. <https://doi.org/10.1111/jpc.13276>

Mondejar-Pont, M., Ramon-Aribau, A., & Gómez-Batiste, X. (2019). Integrated palliative care definition and constitutive elements: scoping review. *Journal of Integrated Care*, 27(4), 285–304. <https://doi.org/10.1108/JICA-11-2018-0069>

National Advisory Committee, N. A. (1997). The national advisory committee. *Indian Journal of Clinical Biochemistry*, 12(S1), i–i. <https://doi.org/10.1007/bf02873038>

National Consensus Project for Quality Palliative Care. (2013). *Clinical Practice Guidelines for Quality Palliative Care, Third Edition*. 12. www.nationalconsensusproject.org

NSW Ministry of Health. (2012). *The NSW Government plan to increase access to palliative care*. <http://www.health.nsw.gov.au/palliativecare/Publications/Palliative-Care-Plan-2012-2016.pdf>

O’Connor, M., Pugh, J., Jiwa, M., Hughes, J., & Fisher, C. (2011). The palliative care interdisciplinary team: where is the community pharmacist? *Journal of Palliative Medicine*, 14(1), 7–11. <https://doi.org/10.1089/jpm.2010.0369>

Palliative Care Australia (PCA). (2018). *Palliative care service development guidelines*. January, 1–33. <http://palliativecare.org.au/wp->

content/uploads/dlm_uploads/2018/02/PalliativeCare-Service-Delivery-2018_web2.pdf

Payne, S., Hughes, S., Wilkinson, J., Hasselaar, J., & Preston, N. (2019). Recommendations on priorities for integrated palliative care: Transparent expert consultation with international leaders for the InSuP-C project. *BMC Palliative Care*, 18(1), 1–8. <https://doi.org/10.1186/s12904-019-0418-5>

Royal College of General Practitioners. (2013). *Information Leaflet for Patients, Families and Friends The Gold Standards Framework in Palliative Care*. <https://www.westsuffolkccg.nhs.uk/wp-content/uploads/2013/08/GSF-Information-for-Patients-Families-Friends.pdf>

Ting, R., Edmonds, P., Higginson, I. J., & Sleeman, K. E. (2020). Palliative care for patients with severe covid-19. *The BMJ*, 370, 1–4. <https://doi.org/10.1136/bmj.m2710>

Walker, K. A. (2010). Role of the pharmacist in palliative care. *Progress in Palliative Care*, 18(3), 132–139. <https://doi.org/10.1179/096992610X12624290276755>

Walker, K. A., Scarpaci, L., & McPherson, M. L. (2010). Fifty reasons to love your palliative care pharmacist. *American Journal of Hospice and Palliative Medicine*, 27(8), 511–513. <https://doi.org/10.1177/1049909110371096>

WHO. (2004). Towards Age-friendly Primary Health Care. *Health Care*, 40.

World Palliative Care Alliance. (2014). *Global atlas of palliative care at the end of life* (Issue January). <http://www.who.int/cancer/publications/palliative-care-atlas/en/>

World Health Organization. (2016). Planning and implementing palliative care services: a guide for programme managers. World Health Organization. <https://apps.who.int/iris/handle/10665/250584>

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