DEVELOPMENT, VALIDATION AND EVALUATION OF PRO-DIPS TO IMPROVE QUALITY OF PATIENT CARE FOR TOTAL KNEE REPLACEMENT PATIENTS

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by

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF ABBREVIATIONS

MOH	Ministry of Health Malaysia
HUSM	Hospital Universiti Sains Malaysia
US	United State
UK	United Kingdom
NHS	National Health Services
CICU	Critical Intensive Care Unit
ICAPPS	Intergrated Care Pathway For Post Stroke
Pro-DiPS	Programmatic Discharge Planning System
NPs	Nurse Practitionals
TKR	Total Knee Replacement
MDAT	Multidisciplinary Athro Team
IPS	Institut Pengajian Siswazah
USM	Universiti Sains Malaysia
APRNs	Advanced Practice Registered Nurses
CNS	Clinical Nurse Specialist
PCP	Primary Care Provider
DPP	Discharge Planning Process
RNs	Registered Nurses
OA	Oesteoarthritis
TKA	Total Knee Arthroplasty
ERAS	Enhance Recovery After Surgery
AMHS	Area Mental Health Services
NEQ	Need Evaluation Questionnaire
HRPZ II	Hospital Raja Perempuan Zainab II
FGD	Focus Group Discussion
SF-HKIEQ	Short Form Hong Kong Inpatient Experience Questionnaire
OARSI	Osteoarthritis Research Society International
NMRR	National Medical Research Registration

LIST OF APPENDICES

PEMBINAAN, PENGESAHAN DAN PENILAIAN KEBERKESANAN PRO-DIPS UNTUK MENINGKATKAN KUALITI PENJAGAAN PESAKIT YANG MENJALANI PEMBEDAHAN SENDI LUTUT

ABSTRAK

Perancangan discaj adalah proses rancangan perawatan secara individu untuk pesakit sebelum meninggalkan hospital bertujuan untuk meningkatkan kualiti penjagaan pesakit, mengurangkan tempoh tinggal pesakit di hospital, meningkatkan pengetahuan rawatan diri pesakit dan meningkatkan kepuasan pesakit. Kajian ini bertujuan untuk membina, mengesahkan dan menilai keberkesanan perancangan discaj kepada pesakit yang menjalani pembedahan lutut. Ini adalah kajian campuran yang terdiri dari tiga fasa menggunakan rekabentuk kaedah campuran pelbagai fasa. Dalam Fasa 1, Model DOES dan kerangka *Programatic Discharge Planning System* (Pro-DiPS) dibentuk secara berturutan daripada carian sorotan literatur, tinjauan menggunakan soalan soalselidik tehadap 96 orang pesakit yang menjalani pembedahan sendi lutut, temubual mendalam dengan 10 orang pesakit dan 25 orang kakitangan professional. Ini diikuti tinjuan pendapat dan proses pengesahan daripada 25 orang pakar dari pelbagai disiplin yang dijalankan menggunakan teknik delphi dan proses semakan semula oleh pakar dengan menggunakan teknik perbincangan kumpulan berfokus. Dalam Fasa 2, proses pengesahan respon Pro-DiPS dengan perlaksanaan bengkel yang bertujuan untuk melatih pegawai kesihatan profesional yang terlibat dalam kajian dan untuk penilaian terhadap pengajaran yang dibuat. Selepas perlaksanaa bengkel, kajian preliminari dijalankan terhadap tiga orang pesakit yang akan menjalani pembedahan penggantian sendi lutut untuk menilai kebolehlaksanaan Pro-DiPS dalam penjagaan pesakit bagi tujuan mengenalpasti kekurangan dan penambahbaikan Pro-DiPS sebelum kajian pilot dijalankan.

Akhirnya, dalam fasa 3, 16 orang pesakit di kumpulan intervensi dan 13 orang pesakit di kumpulan kawalan. Pro-DiPS dilaksanakan sebagai sistem dalam penjagaan pesakit dalam kumpulan intervensi manakala kumpulan kawalan menerima penjagaan dengan sistem yang sedia ada. Keberkesanan intervensi ini dinilai dengan mengukur kefungsian lutut dan kepuasan hati pesakit, kecekapan organisasi dari sudut waktu keluar dan lama tinggal pesakit di hospital dan maklum balas daripada kakitangan kesihatan professional dan pesakit berkaitan dari sudut tahap kemungkinan perlaksanaan dan kebolehlaksaan Pro-DiPS. Keputusan Fasa 1 menunjukkan bahawa Pro-DiPS didapati sahih dengan 100% kesepakatan pakar melalui empat pusingan teknik Delphi dan kesepakatan 100% daripada proses kaji semula oleh pakar dengan menggunakan teknik perbincangan kumpulan berfokus. Pada Fasa 2, Pro-DiPS disahihkan dengan kadar maklumbalas pesakit dan penjaga dalam perlaksanaan bengkel purata 4 dan 5 iaitu pada kadar baik dan cemerlang hanya ada 1 maklumbalas pada kadar 3 iaitu sederhana. Maklumbalas bertulis daripada tiga orang peserta juga menunjukkan kepuasan hati pada sistem yang dijalankan. Pada Fasa 3, kesan intervensi walaupun tidak ada perbezaan yang signifikan tetapi menunjukkan peningkatan skor min pelaksanaan Pro-DiPS terhadap hasil pesakit dan kepuasan kakitangan kesihatan professional. Bagaimanapun, dalam kepuasan pesakit hasilnya menunjukkan perbezaan yang signifikan ($p = 0.029$) dan kumpulan intervensi mempunyai skor median yang lebih tinggi iaitu 9.00 (IQR = 2.00) berbanding kumpulan kawalan 8.00 (IQR = 3.75). Kesimpulannya, kajian di hospital ini menunjukkan bahawa membangun dan melaksanakan sistem berstruktur (Pro-DiPS) membantu meningkatkan perawatan pesakit secara sistematik dan teratur. Oleh kerana ini merupakan kajian pilot yang pertama di Malaysia berfokuskan kepada perancangan discaj yang diketuai oleh jururawat, lebih banyak kajian berdasarkan bukti perlu

diadakan pada masa hadapan untuk meningkatkan lagi hasil intervensi yang berpotensi ini.

DEVELOPMENT, VALIDATION, AND EVALUATION OF PRO-DIPS TO IMPROVE QUALITY OF PATIENT CARE FOR TOTAL KNEE REPLACEMENT PATIENTS

ABSTRACT

Discharge planning is the process of individual treatment plans for patients before leaving the hospital to improve the quality of patient care, reduce the length of patient stay in the hospital, improve patient self-care knowledge and increase patient satisfaction. This study aims to develop, validate and evaluate the effectiveness of discharge planning in patients undergoing total knee replacement. It is a mixed-method study consisting of three phases using a multi-phase mixed-method design. In Phase 1, the DOES Model and Programmatic Discharge Planning System (Pro-DiPS) framework were formed sequentially from highlight searches, surveys using questionnaires of 96 patients undergoing total knee replacement, in-depth interviews with 10 patients, and 25 professional staff. This was followed by an opinion poll and validation process from 25 experts from various disciplines conducted using the Delphi technique, and a review process by experts using the focus group discussion technique. In Phase 2, the Pro-DiPS Module validation process from the implementation of the workshop aims to train the professional health officers involved in the study and for the evaluation of the teaching made. After the workshop, a preliminary study was conducted on three patients who will undergo total knee replacement surgery to assess the feasibility of Pro-DiPS in patient care to identify deficiencies and improve Pro-DiPS before the pilot study is conducted. Finally, in phase 3, 16 patients were in the intervention group and 13 patients were in the control group. Pro-DiPS is implemented as a system in patient care in the intervention group while the control group receives care with the existing system. The effectiveness of

this intervention is assessed by measuring the knee function and patient satisfaction, organizational efficiency in terms of outgoing and long-term stay in the hospital, and feedback from health professionals and related patients in terms of the level of feasibility and feasibility of Pro-DiPS. The results of Phase 1 show that Pro-DiPS was found to be valid with 100% expert agreement through four rounds of Delphi technique and 100% agreement from expert review process using focused group discussion techniques. In Phase 2, Pro-DiPS was validated with patient and caregiver feedback rates in the implementation of workshops on average 4 and 5 which is at an excellent rate there is only 1 feedback at a rate of 3 which is moderate. Written feedback from three participants also showed satisfaction with the system carried out. In Phase 3, the effect of the intervention although there was no significant difference ($p>0.05$) showed an increase in the mean score of the implementation of Pro-DiPS on patient outcomes and the satisfaction of professional health staff. Anyhow, patient satisfaction, the result shows a significant difference ($p=0.029$) and the intervention group has a higher median score of 9.00(IQR=2.00) compared to the control group 8.00(IQR=3.75). In conclusion, studies at this hospital suggest that developing and implementing a structured system (Pro-DiPS) helps to improve patient care systematically and organize. As this is the first pilot study in Malaysia to focus on discharge planning led by nurses, more evidence-based studies need to be conducted in the future to further enhance the results of this potential intervention.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Patients may be discharged from the hospital before they are ready to return home. The push for early discharge can be related to financial reasons for the facility or shortened hospital beds which can drive medical providers to send the patient home at a time when the patient is not well prepared to leave the hospital. Patients' transition from hospital to return home was a challenge for patients and caregivers, especially for patients who need special or long-term care such as post major surgery and patients who are suffering from chronic diseases. Without well preparation, patients will develop complications due to miss management. As a result, the patients will be unplanned re-admitted due to complications. Studies have shown that with the implementation of effective discharge planning, patients will be ready to go home early and continue with good home care (Yam et al., 2012).

Discharge planning is a process of an individualized care plan for the patient before leaving the hospital for home, to improve patient outcomes, reduce the length of stay, increase patient self-care knowledge, and increase patient satisfaction. It is a health system used in most countries that aims to reduce the length of patient stay in the hospital and hospitalization without planning. It also helps improve health service coordination after patients leave the hospital (Gonçalves-Bradley, Lannin, Clemson, Cameron, & Shepperd, 2016). Discharge planning is defined as a dynamic, collaborative and comprehensive healthcare process. The objective is to improve patient care after discharge from the hospital by promoting continuity of care and providing the services and support needed by patients and caregivers (Toufighi et al., 2018) and it is a widespread process, that often involves nurses in planning and coordinating patient

discharge from the hospital. This discharge planning plan aims to reduce the length of time patients stay in the hospital, increase patient outcomes and reduce treatment costs (Goncalves-Bradley et al., 2016 & Shepperd et al., 2010). Although only a doctor can allow patients to leave the hospital, the discharge planning process can be done by other professional staff such as social workers, nurses, and case managers. For patients with complex medical problems, a team approach is a technique that needs to be implemented in discharge planning where effective discharge planning requires the involvement of various disciplines including all healthcare members, patients, and families (Family Caregiver Alliance, 2012).

Discharge planning practices are prevalent in developed countries such as the US, UK, and Australia. These can be seen through a series of discharge planning guidelines or protocols recommended for hospitals. For example; 1) in the UK, the National Health Service Plan (NHS) stipulates the implementation of patient discharge planning should be implemented for every NHS patient from hospital admission to discharge from the hospital (Katikireddi, 2008); 2) in Australia, the Government of Victoria has established an effective discharge strategy in the implementation of patient care since 1998 for all Victorian public hospitals; 3) In the United States, discharge planning is a legally mandated protocol to be implemented in a hospital and one of the basic function of a hospital as required by the Medicare & Medicaid Service Center. These examples of the implementation show the importance of effective discharge planning where policies and guidelines need to be established by adopting a multidisciplinary and coordinated approach to support treatment after discharge (Brett et al, 2011).

In several studies, the implementation of an effective discharge planning system in patient care plays an important role in improving the quality of patient care in terms

of patient satisfaction (Mabire et al, 2013; E. L. Wong et al., 2011 & Lo S., 2000), caregiver satisfaction (Sabzevari et al., 2019), reduced length of hospital stay and readmission rates (Brooke et al., 2013 & Shepperd et al., 2010), improved functional status (Cajanding, 2017 & Mabire et al, 2013).

1.2 Justification of study

Many studies have shown that effective discharge planning should be undertaken in advance of entry to hospital patients. Hospital discharge can be hazardous because discontinuity of care will increase the risk to the patient (Schwarz et al., 2019 & Hussein et al., 2018), one in five hospital discharges is complication by an adverse event within 30 days (Lee Strunin, 2007) this is due to discontinuity and fragmentation of care at discharge (Thomas, Tsai, John Orav, 2015) and non-standardized hospital discharge process (Van Walraven, Seth, & Laupacis, 2002). So that discharge planning services are important services to ensure continuity and safety of patient care after discharge from hospitals (Tan, 2015). Shepperd & Iliffe (2005) identifies making timely references is important to ensure that discharge planning can be implemented in advance. In addition, the making of discharge planning policies for patients and caregivers needs to be designed by policy makers in any department or hospital to enable the implementation of more systematic discharge planning. This policy should include medical, organizational, and patient-oriented aspects. These aspects can increase patient satisfaction and help reduce the length of patient stay in the hospital. This policy should also take into account the expertise of the caregivers and patient preferences as it can help improve the quality of hospital care and patient satisfaction (Ubbink et al., 2014).

A few studies in Malaysia also show the importance of discharge planning where a study on clinical pathway included discharge plan of patient care improve the processes and practice of care delivery from the clinician through the multidisciplinary team (Cheah, 2000). The need for discharge planning process where a study on registered nurses in Critical Intensive Care Unit (CICU) in four Malaysia hospitals found continuing education for nurses related to patient transition experience and post-transition care practices for nurses in Malaysia is a necessity in nurse education as this element is (Ludin & Arbon, 2013) as this element is part of patient discharge planning process. The experience and survey that were done on patients and healthcare providers found that patients faced problems while discharge homes such as delay in the training of using crutches, prescription of medication, and a few other problems. This might be due to ineffective discharge planning. Others few studies focus on patient discharge planning information needs regarding acute coronary syndrome run in Malaysia teaching hospitals (Hussein et al., 2018), the integrated care pathway for post-stroke patients (ICAPPS) (Abdul Aziz et al., 2017), and a literature review on discharge planning for a patient with long term care need (Tan, 2015). Unfortunately, no study on the development or implementation of discharge planning studies was found in Malaysia. Current practices in Malaysia also only implement the discharge process. This process was conducted after the decision for discharge by physicians or doctors. The discharge process is part of the element in the discharge plan. The elements of discharge planning included pre-admission planning, during admission planning, discharge planning, and post-discharge planning.

Realizing the advantages of the discharge planning system in the health management system, the applicability and effectiveness of the discharge planning protocol need to be assessed in the Malaysian context. For that reason, this study is

designed to identify the component of effective discharge planning that is a dynamic, structured, and multidisciplinary care plan. This system will provide high-quality patient care in a timely and cost-effective way that is tailored to local needs. The application of the discharge planning protocol needs to be assessed to ascertain that these systems be effectively implemented in Hospital Universiti Sains Malaysia. From that notion, the proposed discharge protocol namely Programmatic Discharge Planning System (Pro-DiPS) for patients undergoing total knee replacement in this study will provide evidence on the effectiveness of patient care.

Programmatic Discharge Planning System (Pro-DiPS) is dynamic multidisciplinary patient management and care plan, which compiles and describes in detail each step of the care process. Pro-DiPS is proposed as a tool to provide high-quality care on time and save costs. These consist of treatment protocols aimed at standardizing, but managing individually through multidisciplinary input from a medical, nursing, paramedic, and management staff. When developing Pro-DiPS, each part of the treatment process is researched and compared with the results of research and clinical practice aimed at optimal treatment of local conditions. The main purpose of Pro-DiPS is to improve the quality of care and identify important components in the care system, making it possible to apply new knowledge.

1.3 Significance of the study

This study aims to develop a Programmatic Discharge Planning System (Pro-DiPS) that has significant implications for the body of research about patient discharge planning. This study produces a discharge planning model (the DOES model) that facilitates us to come out with a Pro-DiPS framework and the framework facilitates us to come out with the Pro-DiPS manual. Pro-DiPS serves as guidelines on patient care

preparation for discharge. This system not only applies a step-by-step approach to patient care but also explains the reasons behind this approach that need to be incorporated into this system. Indirectly, the healthcare providers, patients, and caregivers are aware of the importance of managing patient care.

1.3.1 The DOES Model

Considering that no discharge planning model was developed in the Malaysian context, this newly validated DOES model will contribute considerably to the body of literature, particularly in the Malaysian context. Furthermore, the DOES model developed herein could facilitate future studies aiming to facilitate future studies on patient discharge planning.

1.3.2 Pro-DiPS

The newly developed Pro-DiPS will serve as instructional material for guiding a similar intervention in a clinical or community setting, in either Malaysia or other developing countries as needed. Furthermore, the findings from the pilot study could encourage further study in this field.

1.4 Operational definition

The definition of operation in research is a statement of procedures used to measure a particular variable. It is referred to ideas of what the researcher meant in their studies. The subsequent chapters were explained the operational definition of the term used in this study.

1.4.1 Discharge planning

A dynamic process of patient care plan starts from patient visits to the clinic or on admission based on a patient's needs involving a multidisciplinary approach.

1.4.2 Programmatic Discharge Planning Protocol

A program to improve the efficiency and efficacy of the current patient discharge process.

1.4.3 Quality of Patient Care

The quality of patient care will be measured through three measurements, that are patient health outcome (patients' functional), organizational efficiency (length of stay, and discharge process time), and patient satisfaction.

1.4.4 Patients functional

Patients' functional is the level of patients' functional before and after total knee replacement surgery, it will be measured by using recommended performance-based tests

1.4.5 Organization efficiency

Organizational efficiency is an evaluation to measure how the system affects the organization's outcomes. It will be measured by using discharge day post-surgery and length of hospital stays.

a. Discharge day post-surgery is the total time in days from the day patients underwent total knee replacement to the day of discharge

b. Length of stay is the total days from patient admission to the day of discharge. Total time in days from the day patients underwent a total knee replacement.

1.4.6 Patient satisfaction

Level of patient satisfaction for the patient receiving Pro-DiPS care as measured by using the Hospital Discharge Survey

1.4.7 Survey

The survey used a questionnaire for participants (health care professionals) and feedback through WhatsApp from patients and health care professionals to assess healthcare professionals' perceptions of the effectiveness of Pro-DiPS in performing desired tasks and changes.

1.4.8 Total knee replacement (TKR)

Total knee replacement (TKR) is one of the treatments for knee osteoarthritis and is considered an effective intervention because the results of TKR treatment are best for the patient. In this study, the patient for TKR surgery was selected as a pilot study to test the feasibility of the developed system.

1.4.9 Feasibility study

A feasibility study is an evaluation and analysis of the Pro-DiPS on total knee replacement patients. This pilot study will determine the applicability and the effectiveness of Pro-DiPS in patient care in terms of organizational efficiency, patient function, and patient satisfaction.

1.5 The Research Objectives

1.5.1 General Research Objective

To establish an effective discharge planning protocol namely Pro-DiPS to improve the quality of patient care.

1.5.2 Specific Research Objectives:

Phase 1: Development of Pro-DiPS

1. To determine the key component of Pro-DiPS.
2. To design Pro-DiPS for patients who underwent total knee replacement surgery.

Phase 2: Validation of Pro-DiPS

3. To determine the validity of the Pro-DiPS score with regards to content, internal consistency, inter-rater consistency, feasibility, and predictability.

Phase 3: Pilot study of Pro-DiPS

4. To evaluate the feasibility of the implementation of Pro-DiPS.
5. To evaluate the effectiveness of the implementation of Pro-DiPS.

1.6 Research Questions for qualitative methods

1. What are the key features of an effective discharge planning protocol?
2. What is the validity of Pro-DiPS in terms of content, response process, and internal consistency?
3. What are the responses in terms of feasibility and applicability of the implementation of Pro-DiPS?

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Literature review in research is a method used to share the results of other studies in the same field of a study done (Creswell, 2003). In this study, the search for the literature was conducted through electronic databases search mainly through Google Scholar, Mendeley, ProQuest, and EBSCOHost. The keywords used for searching relevant articles were discharge planning, discharge planning concept, discharge planning barrier, and discharge planning and outcomes. No limitation in publication date. This review intended to provide a comprehensive narrative synthesis of previously published information related to relevant concepts and practices of discharge planning in patient care.

This chapter summarises what is already known, what work has been done before, and what ideas have already been developed related to discharge planning concepts included discharge coordinator concept implemented in discharge planning, discharge planning model or practices, effects on patient and organizational outcomes, the barrier of discharge planning implementation, related study on discharge planning and the conceptual framework.

2.2 Discharge Planning Concept

Discharge planning is a strategy in the formation of individual care plans for patients who are discharged from the hospital and back home. Effective discharge planning has been proven by various studies showing the improved quality of patient care and outcomes. In addition discharge planning help to promote timely and safe discharge to the home or community (O'Boyle, Graham, & Ellis, 2017). Discharge

planning is a term used in the process of planning patient care activities. This is a critical process of a patient's transition between the treatments received in the hospital and the post-discharge treatment provided in the community (C. J. Lin et al., 2012 & Margaret J. Bull & Roberts, 2001). Discharge planning ensures that patients leave the hospital systematically at the appropriate time in their treatment and with adequate preparation for patients to receive care after discharge (Nowak et al., 2019 & Shepperd et al., 2010). According to Xiao et al. (2019), discharge planning is a complex, multifaceted concept with six elements: comprehensive needs assessment; collaborative, patient-centered care; resource management; care and coordination of services; discharge coordinator role; and a discharge plan. It begins with a quick initial assessment and stabilization of the patient's symptoms upon admission, coincides with treatment planning, and is associated with hospital admission and continuity of treatment. Burke et al. (2014) define discharge planning as a process used to assess the patient needs in patient care for a smooth transition from hospital to home. Although only a medical officer can allow a patient to discharge from the hospital the process of discharge planning can be done by the other healthcare provider such as a medical social worker, nurse, or case manager. Ideally, a multidisciplinary team approach should be implemented in discharge planning for the patient with a complicated medical condition (Family Caregiver Alliance, 2012).

Discharge planning is a strategic process that includes determining the appropriate destination and identifying needs for a safe transition. Effective discharge planning is essential for patient care especially for high-risk patients, gerontology, patients living with informal caregivers, i.e., individuals who are not paid to support medical duties and daily activities where they are responsible for performing more complex treatment to the patient (Mabire et al., 2013).

In short, discharge planning is a process of an individualized multidisciplinary care plan for the patient before leaving the hospital to home, to improve patient health outcomes, reduce the length of stay, increase patient self-care knowledge, and increase patient satisfaction. Effective discharge planning that correlates with the quality of care decreases unmet requirements and improves the quality of life results (Andrew, 2018 & Rahayu, Hartiti, & Rofi'i, 2016).

2.3 Discharge planning model/practice

Structured discharge planning programs were designed by many studies to fulfill patient needs in receiving effective care. Project Re-Engineered Discharge (RED) is one of the structured discharge planning programs developed to prepare a patient for post-discharge care in advance before returning to their homes (Jack et al., 2013). Project Better Outcomes by Optimizing Safe Transitions (BOOST) works to improve the discharge transition from hospital to home (Hansen et al., 2013). Other studies, by using the Patient-Oriented Safe Transition Programme found evidence on the needs of patient transition programs for discharge patients provides useful services for patients who have been discharged (Oh, Kim, & Lee, 2019). These programs not only promote effective healthcare outgoings and provide quality care focused on patient-centered discharge planning but the programs' attention is also on efforts to improve the continuousness of care during transitions (Candelario & Carson, 2016; McDonough, Callans, & Carroll, 2014). In another review on the impact of discharge planning, Shepperd et al., (2013) concluded an appropriate structured discharge plan according to the needs of patient help to reduce hospital length of stay and readmission rates for the elderly who are hospitalized with medical conditions. Support by Parkes & Shepperd (2000) found in their review, hospital discharge planning concept and coordination in patient care give

beneficial effects on subsequent readmission rates in elderly patients. On the whole, structured discharge planning is needed for improving patient care and it has been proved by majority of studies improving the quality of patient care.

2.4 Discharge coordinator

A discharge coordinator is an individual who acts as a consultant, planner, and facilitator for the discharge planning process in a health facility providing support, education, and guidance to hospital staff in the development and application of discharge plans (Lin et al., 2012). & Discharge coordinators are assigned to plan, coordinate, implement and monitor the process of discharge based on the policy of discharge planning to assure continuity of care. They coordinate through a multidisciplinary approach including the patient, family, and healthcare professional team besides coordinate with available resources, and services to enable the transition of the patient from hospital to the community or other care agencies smoothly run in an individualized, timely, cost-effective, and continuous manner (Okoniewska et al., 2015). A study on nurse-led structured discharge planning programs shows improvement of perceived functional health status, cardiac self-efficacy, and patient satisfaction, it shows the nurse plays an important role and is the most helpful person in the implementation of the discharge process (Cajanding, 2017). The nurse practitioners (NPs) not only act in the primary roles as NPs but also function to support the efficient and safe transition of patient care from hospital to home. Their roles are important to facilitate effective discharges for the patient (O'Connor et al., 2016). The role of advanced practice registered nurses (APRNs) and NPs, is basically flexible and continually expanding. The experience in the practice and research have proved that they have a very wide range of functions and widespread benefits to patients, including

continuity of care and reduction of hospital stay in acute care (Fry, 2011; Johantgen et al., 2011). Several studies on comparison of the documentation accuracy in patient care between APRNs and physicians showed higher rates among the APRNs (Bradford et al., 2007).

The role of the clinical nurse specialist (CNS) is more as a coordinator and as a quality improvement analysis for patient care besides acting as discharge planning planner to identify in advance the need for discharge from the hospital, to ensure patients received appropriate education and services (Cooper, McDowell, & Raeside, 2019 & Petitgout, 2015) to determine quality improvement strategies including identifying early primary care provider (PCP), the use of electronic mediums in the discharge process such as electronic discharge form, and effective communication with PCPs during the time of discharge through electronic media such as e-fax to support the effective discharge planning process (Souza et al., 2011). The role of CNS for patient care improved patient satisfaction scores, decrease the length of a hospital, and the role has been well integrated into patient care. However, their roles do not include directing the patient treatment plans such as signing the patient's permission for discharge or writing prescriptions (Lopatina et al., 2017 & Petitgout, 2015).

2.5 Discharge planning impact on patient

Discharge planning aims is to improve patient care. The impact of discharge planning on the patient was discussed further in subsequent topics; i) discharge planning and patient satisfaction, ii) discharge planning and length of stay, and iii) discharge planning and patient functional status.

2.5.1 Discharge planning and patient satisfaction

Patient satisfaction in receiving care is part of the healthcare provider's objectives for patient care. Effective discharge planning can contribute to improving patient satisfaction. Finding from a pilot study done by Gillette, (2002) on elderly patients and their families using the ten-point scale of satisfaction rating, shows the significant result on their satisfaction with the discharge planning program implemented. Support with a study done by Lo et al., (2009), also found that increases in patient satisfaction scores for discharge instructions, discharge procedure, and staff communication. The implementation of the discharge plan in the neonatal intensive care unit showed increasing mothers' satisfaction (Sabzevari et al., 2019). An increase in patient satisfaction in the discharge planning is associated with reducing the psychological effect such as anxiety and stress among the patient, family, health care provider, and community services (Carroll & Dowling, 2007) and reducing the readmission rate in 30-day risk-standardized after improving the quality of the clinical services (Takahashi et al., 2013).

The above studies have shown that implementing discharge planning had increased patient and caregiver satisfaction by reducing stress, anxiety, and readmission to the hospital and increasing understanding of post-discharge care, and improving staff communication.

2.5.2 Discharge planning and length of stay

Many studies through the concept of discharge planning have been run to decrease the length of hospital stay over the years. A study on the implementation of a structure for an older patient with a medical condition show, a small reduction in length of hospital stay but does not affect the health outcomes, health cost, and mortality (Lin

et al., 2012 & Shepperd et al., 2010). Several other previous studies had also found that effective discharge planning with post-discharge follow-up help to reduce the length of hospital stay (Fox et al., 2013). As opposed to a study conducted by (O'Brien, 2002) whereby a survey was conducted on patients who undergone the total hip replacement and total knee replacement showed no significant findings on length of hospitalization. On the other hand, a study was done by Pearson et al. (2001) showed that length of stay for TKR patients has fallen dramatically, however, this result was due to pressure on the need for hospital beds for new admission and the financial cost instead of focus on the improvement the quality of patient care (Ayalon et al., 2011 & Vellinga, O'Donovan, & De La Harpe, 2008).

However, some studies found no statistical significance in the length of stay reduction in patients with chronic disease (Brock et al., 2017 & Zhu et al., 2015). According to other studies, in a certain situation or due to other factors discharge planning does not affect the length of hospital stay. Early discharge planning is a critical and modifiable program used to help in the reduction of hospital stay which is influence by many uncontrollable factors and varies, based on the practice of an organization and the geographical of an area (Miani et al., 2014), other significant factors that influence the ineffectiveness of five hospital systems are related to the coordination and uncontrollable for the patient flow of care and some external factors (Ubbink et al., 2014) and 30% of the factors that influence delayed in hospital discharge process are non-medical reasons (Costa et al., 2012). When failure to implement effective discharge planning and hospital coordination, causes prolonged a patient's hospitalization, resulting increase in financing costs (Arana et al., 2017). Early determining of discharge needs for patients with a complex condition is one of the strategies in discharge planning

to help in reducing the length of hospital stay and enhance the resources (Holland et al., 2017).

2.5.3 Discharge planning and patient functional status

Improving functional status is a wish of many patients after receiving treatment and care from the health providers. Discharge planning is part of patient care which is can help in improving patient functional status. A study by TT Huang, Huang, & Liang, (2005) shows, an older patient with hip fractures gain various benefit from the discharge planning program and the program shows relevance to clinical practice. A nursing discharge planning intervention proves that by implementing effective discharge planning nurses can help to improve patient functional outcomes and quality of life in hip fracture patients. Support by a study conducted by O'Brien, (2002) where a comparison study (pre and post-surgery) on patients undergone arthroplasty surgery (a total hip replacement and total knee replacement) also found a very significant finding of patient functional outcomes. Although, lack of study done in measuring the discharge planning on TKR patient functional status, others study as discussed above showed that, effective discharge planning can improve the patient's functional status.

2.6 Discharge planning impact on Organizational Efficiency

The main problem faced by healthcare organizations is how to maximize the available capacity to meet the increasing number of patients while maintaining operational efficiency and cost-effectiveness (Kobis & Kennedy, 2006). In January 2008, a joint commission conducted a system detector to identify problems with patient flow. The reason behind the new tracker is patient safety. Delay in treatment, medical errors, and unsafe practices occur during patient congestion and can contribute to

sentiment events (Joint Commission, 2008). Overcrowding in the emergency department is related to patients who have problems while receiving treatment and have caused systemic problems caused by operational inefficiencies and treatment processes, failure to use effective information technology systems, and ineffective communication throughout the healthcare system. Overcrowding in the emergency department is related to patients who have problems while receiving treatment and have caused systemic problems caused by operational inefficiencies and treatment processes, failure to use effective information technology systems, and ineffective communication throughout the healthcare system (Scalise & Gifford, 2006). Several factors have been identified that influence the effectiveness of an organization's treatment of patients during their stay in the hospital. Factors that have been identified include the length of patient stay in the hospital, especially medical-surgical patients, the duration of the implementation of the patient admission and discharge process by the nursing unit, the percentage of patients who are outside, the use of hospital beds by hospitals and other treatment units and the use of beds by each patient. Several factors have been identified that influence the effectiveness of an organization's treatment of patients during their stay in the hospital. Factors that have been identified include the length of patient stay in the hospital, especially medical-surgical patients, the duration of the implementation of the patient admission and discharge process by the nursing unit, the percentage of patients who are outside, the use of hospital beds by hospitals and other treatment units and the use of beds by each patient (Scalise & Gifford, 2006).

Advanced nurse-centered discharge planning and home-based care intervention for high-risk elderly found help to reduce hospital admissions, extend hospital admission, and help in reducing the cost of providing health care (Naylor et al., 1999). Effective discharge planning practice is found to contribute many benefits to the

organization and patient in the process of patient care such as improved organization efficiency, patient health, and patient satisfaction. In organization, effective discharge interventions from previous studies and literature review found in reducing unplanned readmission, mortality, length of hospital stay, improved quality of life, patient, career, general practitioner sand other community providers satisfaction, besides improved independence post-discharge care and better utilization of community services (U.S. Department of Health and Human Services, 2000)

Table 2.1 The discharge planning impact on patient and organization summarises

Discharge planning Impact	
Impact on patient	**Impact on organizational efficiency**
Increased patients' satisfaction	Reduced readmissions rate
Reduced length of stay	Decreased the coat
Improved patient functional status	Reduced mortality
	Better utilization of community services

2.7 Barriers in implementing discharge planning

In implementing a discharge planning program, several factors can influence the effectiveness of the program that need to be considered. The factors are related to the healthcare system, healthcare professionals, patients and social that become barriers to implementing the discharge planning program (Chan et al., 2011 & Deye et al., 2016).

2.7.1 Healthcare systems factors

The barrier in healthcare systems was related to a shortage of staff, ineffective communication among the healthcare and community, and the pressure to discharge patients on time due to bed unavailability may contribute to inappropriate discharge (Chan et al., 2011 & Bowles, Foust, & Naylor, 2003) and communication between

providers and patients should be considered to improve discharge planning and framework (Harrison et al., 2016). Other barriers to hospital discharge included complications faced by the patient, a lengthy hospital stays due to delayed discharge (Jonsson et al., 2018), inefficient care coordination, insufficient hospital discharge instructions and health education, (Karliner et al., 2012), advanced age, bilateral operation, patient complication and poor patient compliance to the treatment and also others factors that influence the length of stay (Lo, Lee, & Wong, 2017). Deficits in the practice of effective discharge planning process (DPP), such as ineffective communication and collaboration between healthcare providers, can cause discontinuity of care (Wong et al., 2011 & Gigantesco et al., 2009) that may cause complications to the patient and inefficient in discharge processes such as delayed discharge, readmission (Sharma et al., 2017 & Shepperd et al., 2010) and ineffective post-discharge care (Feizolahzadeh et al., 2019 & Benbassat & Taragin, 2000).

2.7.2 Healthcare professionals' factors

Excessive workloads among nurses (Nordmark, Zingmark, & Lindberg, 2016 & Watts, Pierson, & Gardner, 2006), erratic work schedules among healthcare providers (Pinelli, Papp, & Gonzalo, 2015 & Olsen, Hellzén, & Enmarker, 2013), limited trained staff (Kennedy et al., 2014 & Bowles et al., 2003a), and timely ineffective communication exchanges (Payne et al., 2002 & Preyde, MaCaulay, & Dingwall, 2009), unclear roles function (Watts & Gardner, 2005 & Nordmark et al., 2016), unclear routines, unstructured information (Song, & Hamilton, 2014) and lack of knowledge (Nordmark et al., 2016) are some of the factors impeding the discharge planning. Other than that, healthcare providers may not be aware of the importance of effective documentation and having necessary knowledge related to discharge planning but they

agreed that effective documentation is a very important item for patient care. However, a majority of participants indicate that not everyone needs training or does not use it at all (Wong et al., 2011).

Constraints on the optimal use of knowledge and skills by social workers cause misinterpretations of their organization and lead to constraints on the use of human resources at the correct time. The role of a social worker is broad but non of the aspects focus on discharge planning (Glaser & Suter, 2016). Other studies highlighted that the role of social workers is important in transitioning patients safely back home (Barber et al., 2015; Cleak & Turczynski, 2014 & Judd & Sheffield, 2010).

The characteristics of nurses are another staffing structures factors that can influence patient outcomes (Needleman et al., 2020 & Aiken et al., 2017). For instance, a nurse who is skilled in planning, organizing, directing, and providing care and services is crucial to managing complex patients (Krichbaum et al., 2007)

2.7.3 Patient factors

The barrier to discharge planning to the patients was ineffective communication such as problems in vocabulary and inadequate skills to communicate with healthcare providers and deficit of knowledge (Wong et al., 2011 & Kripalani, 2008) such as understanding of recovery plan, and daily-living activities (Harrison et al., 2016), distrust of doctors and other health workers, the intimidate health system, fear of receiving a serious diagnosis or prognosis (Powell et al., 2016). elderly, the severity of the condition or diseases, female, and type of procedure or treatment were identified as risk factors for discharge to post-acute care (Sivasundaram et al., 2016).

Patient readiness for discharge is an important outcome metric of the discharge preparation process and predictor of readmission risk (Schmocker et al., 2015), it was

correlated with the quality of discharge education run by the nurse (Harrison et al., 2020). From the view of patients and family caregivers, they often feel that they do not ready enough to discharge from the hospital and have attributed the post-discharge complication to inadequate preparation (Henderson & Zernike, 2001 & Driscoll, 2000).

2.7.4 Social factors

Social health is one of the important aspects of life. There are several social factors related to poverty in life including financial problems such as lack of insurance and employment, mental health problems and substance abuse, housing and transportation problems, and uncertainty in life (Wong et al., 2011).

improve the health system in terms of financial assistance, provide different manpower, improve effective communication between organizations involved, need patient-centered treatment time, improve more effective patient education system planning discharge, improve the effective health system in society to help healthcare providers are gaining a better understanding of the unique needs of the community (Powell et al., 2016).

Table 2.2 The factors that influence the effectiveness of discharge planning summarizes

Factors			
Healthcare system factors	Healthcare professional factors	Patient factor	Social factor
1. Lack of staff	- High workloads among RNs	1. Lack of knowledge	1. Financial shortcomings
- Communication among healthcare professionals	- Variable schedules among healthcare personnel	2. Lack of understanding of recovery plan, and daily-living activities	2. Mental health and substance abuse
3. Bed unavailability	4. A lack of trained personnel	3. Mistrusting of physicians	3. Housing
- Communication providers and patient	- Ineffective communication for timely exchange	4. fearful of receiving a serious diagnosis	4. Transportation limitation
5. Complication	5. Unclear roles	5. Age	5. Poverty
6. Delayed discharge	6. Unclear routines	6. Number of comorbidities	
7. Poor care coordination	7. Unstructured information	7. Procedure type	
8. Inadequate instruction to the patient	8. Lack of knowledge	8. Patient readiness	
9. Complex system	9. Unstructured roles		
10. Poor collaboration between care providers			

2.8 A related study on discharge planning

Some reviews have done to the related study on discharge planning found an array of theories/concepts and methods used and the findings from the studies. The studies show a variety of concepts were used to improve patient care. The methods used in the studies were based on the objectives and not comprehensive, only a study was done by (Ubbink et al., 2014) showed the comprehensive method used, maybe due to the objectives to define relevant discharge criteria. The method used was a questionnaire to the patients, an interview with the caregiver (doctors and nurses), and observations no validation method was mentioned in the study. The studies review is summarised in Table 2.3.

In this study, the concepts used were integrated into the development of the discharge planning system. The method used is more comprehensive where widen the scope of healthcare professional view which involve doctors, nurses, physiotherapist, occupational therapists, and medical social welfare official included patients view though multi-methods and multi-phases of data collection there are questionnaire, interview, Delphi technique and focus group discussion was used. The related findings give baseline ideas about the discharge planning components.