

## ORIGINAL ARTICLE

# Empowering Patients' Experience through a Shari'ah-Compliant Model using Patient Care System PACSYS™

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## ABSTRACT

**Introduction:** In healthcare today, the leading priorities amidst reducing cost are the projected shortage of skilled medical professionals, improving quality of care and patient satisfaction. With the advent of digital technologies like the internet and social media, patient care has entered a new era, altering the patient experience. Healthcare professionals go above and beyond to meet the requirements of their patients as a result of a growing understanding that patient empowerment results in improved patient satisfaction and financial rewards. An-Nur Specialist Hospital has introduced the patients terminal to empower themselves with the software application modules known as PACSYS™. The purpose of the study is to evaluate how much PACSYS™ enable to meet the patients' requirement in term of Empowerment based on the seven essential components of Patient Empowerment as proposed by Ennis-O'Connor. **Methods:** The methodology used is through patients' survey. The survey was carried out to 50 in-patients to answer questions related to the seven essential components on PACSYS™. Based on Linkert scale of 1 to 5 the data was recorded and analysed. **Results:** The results indicated that more than seventy percent of the patients use PACSYS™. More than eighty percent mentioned that PACSYS™ provides much convenience to patients with added values features that enhance one's stay in the hospital. The essential components for patients' empowerment have been met. PACSYS™ is an interactive bedside solution for the healthcare environment. **Conclusion:** PACSYS™ not only meets patients' entertainment and communication needs, but it also provides extensive opportunities for hospitals to engage further through the range of robust Patients' Empowerment and Clinical Solutions.

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## INTRODUCTION

The role of information technology in improving health care quality and patient engagement has spurred growing interest due to the report by the Institute of Medicine's 2001 report. The report emphasised the critical role of information technology in designing health care systems that meet six objectives of care, namely, care that is safe, effective, efficient, timely, equitable and patient-centred (2). The report recommended establishing a healthcare information infrastructure that would eliminate most handwritten clinical data by the end of the decade. Information Technology has since penetrated the healthcare sector in a big way, although there are slippages in implementation. In the study by Cresswell and Sheikh [2] it was found that the slippages

were due to four factors, namely, strategic context, organisational approach, social consequences, and technical characteristics. Despite these in Malaysia, the survey done by Adzrieman (4) indicated that Information Technology has dramatically provided better services in the healthcare industry. Another study conducted by Lee [4] strengthens the claim that Information Technology has assisted in higher productivity since many manual jobs have been overtaken by automation and good record keeping.

In healthcare today, the leading priorities amidst reducing cost are the projected shortage of skilled medical professionals, improving quality of care and patient satisfaction. Patient care has entered a new era with the advent of digital technologies like the Internet and social media, impacting the patient experience. A growing awareness that patient empowerment leads to increased patient satisfaction and economic gains makes healthcare providers go the extra mile to cater to their patients' needs. Satisfying patients' needs is the first

step towards patient Empowerment. That is why service differentiation becomes increasingly important by providing the patients with high-quality entertainment and communication services at the bedside.

An-Nur Specialist Hospital, a Shari'ah-compliant Hospital (SCH), has introduced a fully integrated bedside solution, PACSYS™, since June 2019 that helps to engage and entertain patients, making their stay in the hospital more comfortable (6). It will support smoother day-to-day hospital running, enhance efficiency, enable faster recovery, and support optimal clinical workflow for healthcare providers.

The purpose of the study is to evaluate how much has PACSYS™ able to meet the patients' requirement in term of Empowerment based on the seven essential components of Patient Empowerment as proposed by Ennis-O'Connor [6]. As the primary recipient or end-user of the product or service, the patient's experiences with the quality of product or services become critical in evaluating the quality of delivery of the products or services. Therefore, examining the patient's viewpoint becomes essential.

Empowerment has been discussed in healthcare literature over the past decade. Patient empowerment aims to promote the development and implementation of policies, strategies and healthcare services that empower the patient to be involved in decision-making and management of their conditions. (8) Many of the studies involved patients affected by long term conditions, LTC, since managing these LTCs is a significant challenge facing healthcare systems worldwide. (9)

In the UK, the NHS is committed to providing high-quality care for all through patient empowerment by giving patients more choice and control over their health, making hospital funding contingent upon performance against a range of quality measures and implementing the use of personalised care plans and personal health budgets. (10)

There is still a lack of literature in patient empowerment especially utilising present IT Technology through a bedside terminal with interactive software applications. The term empowerment chosen is to engage and involve patients depend on what is appropriate for the specific culture of a region or community. Patient empowerment might be the preferred term from a patient advocacy point of view. However, the less emotionally charged and challenging term patient participation might be more acceptable to many HCWs, patients, and cultures. For these guidelines, the word empowerment is used.

WHO defines Empowerment as "a process through which people gain greater control over decisions and actions affecting their health" and should be seen as both an individual and a community process.

Four components have been reported as being fundamental to the process of patient empowerment: 1) understanding by the patient of his/her role; 2) acquisition by patients of sufficient knowledge to be able to engage with their healthcare provider; 3) patient skills; and 4) the presence of a facilitating environment. Based on these four components, Empowerment can be defined as:

'A process in which patients understand their role, are given the knowledge and skills by their healthcare provider to perform a task in an environment that recognises community and cultural differences and encourages patient participation.'

The study by Anshari (11) proposed three significant components, namely 1. Empowerment Electronic Medical Objects 2. Online Health Educator 3. Online Social network. Through these three components, the outcome expected would be 1. Improve Customer Satisfaction and 2. Improve Health Literacy. However, another study by Bravo (8) proposed a conceptual model of patient empowerment through three Ethos, namely 1. Patient-level: Ethos 2. Healthcare Provider: Ethos and 3. Healthcare System Level: Ethos. The expected outcome would be the change in patients behaviour in 1. Participate in Shared Decision Making 2. Manage their health and care 3. Empower themselves. Finally, the patient's outcomes would be 1. Adaptation to Chronic illness 2. Quality of life 3. Wellbeing/ Satisfaction with Life 4. Independence.

In another proposal by Ennis-O'Connor (7), she proposed seven essential components of Patient Empowerment, namely;

Information is fundamental to the process of patient empowerment. Patients make the best decisions when armed with the correct information. To make genuinely informed decisions about the treatment, the patient must have access to the relevant information needed to make those decisions. Research shows that access to the correct information, at the right time, delivered in the right way, leads to an increase in a patient's desire and ability to take a more active role in decision-making.

While access to information is a crucial driver of patient information, health literacy is defined as "the degree to which individuals can obtain, process, and understand basic health information and services needed to make appropriate health decisions." (National Library of Medicine). Health literacy should come before digital literacy.

Western Sydney University (12) defines digital literacy as having the skills you need to live, learn, and work in a society where communication and access to information are increasingly through digital technologies like internet platforms, social media and mobile devices.

Opinions on whether digital literacy is essential to

patient empowerment vary. Digital literacy is not an absolute requirement, but finding accurate, relevant information and understanding the data is necessary. Many agreed that digital literacy is not fundamental since Empowerment needs to be across all socioeconomic groups. However, access to your medical information online will be restricted, and digital literacy strengthens the empowerment process. (13)

As it relates to healthcare, self-efficacy is belief in your ability to effect change in outcomes so that you can achieve your personal health goals. Developing a sense of personal control over one's health is in itself empowering. The empowered patient is confident in their ability to manage their condition. When unsure about where to go or what to do next, they will ask questions of the healthcare professionals providing their care. This confidence comes more accessible than others, and even the most faith may need guidance from their doctors in managing their disease.

The healthcare professional is the most critical contact point for the patient, and the system and (dis) empowerment often manifests in the patient/professional relationship. At the heart of the Empowerment approach is seeing the patient-professional relationship as a partnership of equals.

A patient-professional relationship is a partnership approach that seeks to balance clinician expertise with patient preference. It recognises that while healthcare professionals are the experts in their knowledge of a disease, patients are the experts by experience. The empowerment process is about sharing both knowledge and experience to set new goals and learn with and from each other. Building better relationships and seeing the patient as more than 'just a patient'. For people with chronic conditions, effective communication, continuity of care and establishing a relationship of trust is essential.

This partnership approach allows for Shared Decision-Making (SDM) – the conversation between a patient and clinician to reach a healthcare choice together. Examples include decisions about surgery, medications, self-management, and screening and diagnostic tests. There is ample research that suggests that health outcomes are better in patients who are more involved in decisions about their treatment.

In the SDM model, the clinician provides current, evidence-based information about treatment options, describing their risks and benefits, and the patient expresses his or her preferences and values. Seldom do medical practitioners track whether patient goals are being met since this is the essential part of quality.

Patient empowerment activates the person's inner assets and supports them to make the best use of them. Being sponsored is a critical component of patient

empowerment. Many patients would like to take more responsibility for their health and care, given the opportunities and support.

Empowerment does not happen in a vacuum: it is a two-way process. The patient needs a counterpart in the health professional who welcomes the patient's involvement and knows how to create an enabling healthcare environment. Often a patient became an independent advocate when one realised most doctors do not have the time (and often skills) to take this facilitating role and promote shared decision-making that patients desperately need.

Computerised patient care systems had become available before the mid-1980s to nurses, physicians and other care providers, usually from a centralised location on each nursing point (14).

In today's health care delivery environment, hospitals are recognising the need to optimise their care operations to improve the efficiency, efficacy, and service quality of primary health care providers, particularly the medical staff and nursing services, which comprise about 50% of the hospital's total personnel. Because health care institutions are in the business of caring for patients, and because health care delivery essentially is a personnel-intensive information industry, operations optimisation is supported best by information systems that fully integrate all information concerning the patient. The goal of introducing the IT System is to simplify the job duties of direct care providers. The benefits of an integrated, patient-centred approach include demonstrable improvements in overall patient care quality and staff satisfaction, as well as a significant reduction in costs. (15)

With the emphasis on cost containment and quality of care, an information technology system was installed to improve the hospital's operations. Due to acute nursing care accounts for a substantial portion of a hospital's personnel and services, point of care terminals at patient bedsides may lead to greater efficiency, among other benefits. Bedside access to information systems can mean that data is more accurately recorded and that nurses' time is more effectively spent on clinical care than clerical duties. (16)

To effectively evaluate hospital information systems today, one must consider all aspects of the system, not simply the placement of terminals. A well-designed system will be integrated via a single database, support the concept of patient care management by exception, and be bedside-based. Bedside-based data entry is a crucial aspect of a well-designed system. The placement of terminals should support the workflow, not vice-versa. There are times when nurses and physicians will logically document at the nursing station, in the nurse's lounge, the physician's office, or a clinic; therefore,

terminals should be located in these areas. However, the majority of care rendered is provided to the patient in a bed. Therefore, if computers will support clinical applications, they must include data entry devices at the bedside. Results to date show this to have a uniformly positive effect on the cost of care, quality of care and patient satisfaction. [16].

Consequently, bedside terminals were introduced primarily to capture more immediately observed patient data and improve nursing productivity by facilitating more timely monitoring procedures.

Studies have been presented on the Impact of bedside terminals at New York University Medical Center, New York, NY. Using a parallel control-group design for before and after usage, the quality of computerised nursing documentation was studied before and after adding computers to patient rooms. The quality of documentation was defined by timeliness and completeness of data. The study hypothesis, which predicted a positive relationship between the presence of bedside terminals and the quality of nursing documentation, was not supported. Study results showed minimal use of the computer terminals located in inpatient rooms. Surprising positive results emerged with the help of terminals located in rooms. [17]

A systematic evaluation of a bedside computer system for nursing documentation indicates that point of care technology has a positive direct impact on the efficiency, effectiveness, and satisfaction of the nursing staff. The result has a positive indirect influence on other health care team members in their delivery of patient care. [18] An-Nur Specialist Hospital had introduced interactive bedside terminals that allow patients to empower themselves with the software application modules known as PACSYS™ [19].

PACSYS™ is an interactive bedside solution that delivers a wide range of TV channels, an extensive on-demand video library, internet connectivity and a reliable Shari'ah-compliant solution. It is the most comprehensive and interactive hospital media system available on the market today in Malaysia. Designed for the healthcare environment, PACSYS™ not only meets patients' entertainment and communication needs and provides extensive opportunities for hospitals to engage further through the range of robust Patient Engagement and Clinical Solutions. Providing patients with access to entertainment can be extremely useful in keeping patients distracted, calm, and rested and in the best possible condition to respond to treatment. Due to the SCH requirement, the access to entertainment is being filtered through Salam Web Technologies™, which provides the filtering process in denying access to view non-halal websites. [20]

PACSYS™ was designed with the hospital environment

in mind, providing patients with a wide range of multi-media services and gives clinicians secure, direct access to the hospital information system at the point of care, POC. Clinicians use POC to view medical records, order and verify medication, and share patient scans and test results right at the bedside. Patients have access to educational materials, satisfaction surveys and other helpful tools through PACSYS™. Medical staff can access videos, audio files, and documents to educate patients on Shari'ah related matters example, prayer (solat), fasting and other Islamic knowledge and practices. Hospitals can prompt participation in inpatient surveys to collect real-time, actionable information on satisfaction scores. Network Architecture of the Hospital IT System

The Hospital IT System has been from the onset designed to cater for Digital Hospital. [21]. The backbone is based on IP network architecture with the core network is on optical fibre. A ring network topology from the main switches on redundancy configuration to all the routers at every floor. The servers are also redundancy configuration. The PACSYS is integrated with the Nova Hospital Information System backbone through the IP Network.

The goal of the study is to assess how well PACSYS™ satisfies patients' needs for empowerment based on the seven key elements of patient empowerment suggested by Ennis-O'Connor.

## MATERIALS AND METHODS

The research attempts to unfold the benefits and features offered by empowering the patient. The features provided by PACSYS™ were proven to support patients empowerment in the survey.

From Figure 1, the modules available are Al Quran, Hospital Information, Health Information, Patients Services, Entertainment, Special offer, Prayer Services and User guides. The content of modules are categorized as Social Media Account, Entertainment Access, General & Health and Information Access, Shari'ah Information and Patients Services. The matching of the modules with the 7 components of the Patients Empowerment were carried out.

Purposive sampling methods in which selected respondents from inpatients were given the questionnaires. Questionnaires were developed based on the extracted features in the modules available, using the 5 point Linkert scale.

Fifty respondents participated in the survey, which was conducted from February till March 2021. The survey's data were evaluated and interpreted.

## Ethical Statement

The author confirmed that all participants who took part

in this program were informed about the purpose of the study, in accordance with the Declaration of Helsinki. The Hospital authority has given the clearance to carry out the study.

## RESULT

The results of the survey were presented in Table I and 2. The matching of the seven essential components of patient empowerment against the PACSYS™ modules as in Figure 1.

Table I shows that the majority of the respondents were between the age group of 20 to 55 years old, and they are potential users of PACSYS™ because of their essential Digital Literacy. Fifty per cent of the age group has intermediate knowledge of digital technology. This age group is a critical success factor for Empowerment through PACSYS™. With little guidance and their digital literacy knowledge, 90% of them explored the usage of PACSYS™. The high digital literacy indicates that there



Figure 1: The Modules available on PACSYS

will be higher usage of PACSYS™ in years to come when digital literacy is ubiquitous.

Table II indicated the empowerment features and the high usage ranking of the modules available presently in PACSYS™. The highest usage is still Entertainment access which has replaced the TV set. However, the System allowed is Shari'ah-compliant access since Salam web technologies were installed in PACSYS™.

Table I. Demographic of the Respondents

Gender		Digital Literacy	
50 %	Male	20%	Basic
50%	Female	50%	Intermediate
		30%	Advance
Age Group			
20%	26-35		Received Guidance
60%	36-45	50%	Yes
20%	46-55	50%	No

From the data available, the features of the modules and the seven essentials components of patient empowerment were matched as per Figure 2.

Each bed is equipped with the bedside terminal with Pacsys as the content modules as shown in. The features of the modules presented have two characteristics, namely 1. Interactive 2. Non- Interactive. The interactive is mainly involved Patient Services that require inputs from the patients whilst the non-interactive are that

Table II. Result of the Empowerment Features

General	
70%	Prefer Digital Services Over Television
100%	Beneficial Throughout My Stay
80%	User Friendly
Patients Services	
70%	Billing Modules beneficial To Me
70%	Feedback Module
80%	Ready To Share Experience To Others
Ranking On Modules	
1	Entertainment Access
2	Patients Services
3	Shari'ah Information
4	Social Media Account
5	General & Health Information Access

information-based and read-only.

Some of the respondents' comments submitted included:

1. It is a good alternative and solution with paperless

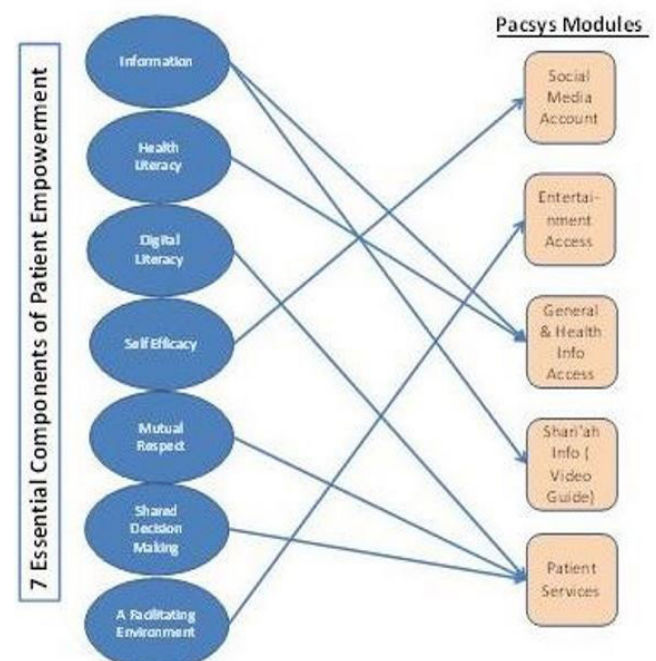


Figure 2 Matching of the 7 Essential Components of Patient Empowerment against Features in PACSYS™ Modules

throughout in line with IR4.0

2. Integrated online phone through the headset
3. Overall, good
4. Not ergonomic in my case since the screen cannot be pulled to the centre of the bed. ( It was checked after the survey that the POC arm was faulty, the screen cannot be drawn to the centre of the bed)

## DISCUSSION

The study posed some limitations in that no indicators of patient empowerment were identified that distinguishes immediate, intermediate and long term outcomes from medical communication. [22]. The study excluded this at present because the patients were not Long Term Conditions, LTC patients. Another indicator of patient empowerment is Health Literacy. Although PACSYS™ has a module on this component, it is still limited information. Nutbeam's (24) model of health literacy includes functional, interactive and critical aspects and all these three dimensions are to influence the effectiveness with which patients utilise the health information. Patients may be disempowered by consultations when the medical information is not well understood [24].

## CONCLUSION

The high usage and commendable comments from the survey with more than 70% of respondents supported the presence of PACSYS™. It is a fully integrated bedside solution that assists in engaging and entertaining patients, making their stay in hospital more comfortable and supporting smoother day-to-day hospital running, enhancing efficiency, enabling faster recovery and supporting optimal clinical workflow for healthcare providers. The detail presentation of PACSYS™ can be accessed from the youtube at <https://youtu.be/qgCnudHXaSM>.

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