BELIEF TOWARD PATIENT WITH MENTAL HEALTH PROBLEM AMONG MEDICAL DOCTORS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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LIST OF SYMBOLS, ABBREVIATION OR NOMENCLATURES

BTMI	Belief Toward Mental Illness Scale
AMIQ	Attitude toward mental illness questionnaire
WHO	World Health Organizations
NHMS	National Health & Morbidity Survey
IPH	Institute for Public Health
DALYs	Disability-adjusted life years
YALs	Years living with disability

ABSTRAK (BAHASA MELAYU)

LATAR BELAKANG

Doktor memainkan peranan yang penting dalam perawatan pesakit dengan masAlah kesihatan mental. Kepercayaan negatif terhadap pesakit yang mengalami gangguan kesihatan mental dalam kalangan doktor boleh menjejaskan kualiti rawatan yang diberikan kepada mereka. Justeru, tujuan kajian ini adalah untuk mengenalpasti tahap kepercayaan para doktor tentang pesakit mental dan faktor-faktor yang mempengaruhi kepercayaan mereka.

METODOLOGI

Kajian keratan rentas ini telah dijalankan di kalangan doktor di Hospital Universiti Sains Malaysia dari Januari 2020 hingga Mei 2020. Sebanyak 180 peserta dipilih dengan menggunakan kaedah persampelan bukan kebarangkalian. Mereka diminta melengkapkan satu set soalan kaji selidik dalam bentuk google form yang mengandungi data sosiodemografi dan set soalan belief toward mental illness (BTMI), yang telah diedarkan melalui emel dan pesanan peribadi. Data ini telah dianalisa dengan menggunakan IBM SPSS Statistical Software Version 24.

KEPUTUSAN

Purata tempoh pengalaman bekerja dikalangan peserta kajian adalah 7.39 tahun (SD: 5.46). Pegawai perubatan adalah kumpulan yang paling banyak memberi respon (n=111, 66.2%) berbanding pegawai perubatan siswazah (n=33, 18.3%) dan pakar serta pakar perunding (n=28, 15.6%). Sekitar 33.9% memiliki pengalaman dalam bidang psikiatri dan majoriti pernah mempunyai kontak dengan pesakit mental (n=155, 86.1%). 14.4% peserta kajian pernah mengalami masalah kesihatan mental. Purata keseluruhan

tentang kepercayaan doktor tentang pesakit mental adalah rendah dengan nilai purata 43.32 (SD: 14.74). Subskala kecil juga menunjukkan nilai min yang rendah iaitu kurang percaya pesakit mental adalah merbahaya 6.95 (SD: 3.94), disfungsi sosial 14.08 (SD 5.68), tidak boleh dirawati 14.37 (SD 4.7) dan pesakit mental adalah mengaibkan 7.92 (SD: 4.01). Keputusan juga menunjukkan hubungan yang signifikan di antara doktor dari jabatan psikiatri pada subskala berbahaya, mempunyai disfungsi sosial, dan mengaibkan, mereka mempunyai skor lebih rendah pada subskala tersebut. Hubungan yang signifikan juga wujud di antara doktor daripada kaum India dengan kepercayaan bahawa pesakit mental tidak dapat dirawat, mereka mempunyai skor yang lebih rendah pada subskala kepercayaan bahawa penyakit mental tidak dapat dirawati.

KESIMPULAN

Kajian ini mendapati doktor mempunyai kepercayaan positif terhadap pesakit yang mengalami masalah kesihatan mental walaupun dari latar belakang yang berbeza. Doktor dari jabatan psikiatri mempunyai kepercayaan yang lebih baik pada subskala kepercayaan bahawa pesakit mental adalah berbahaya, mempunyai disfungsi sosial dan juga mengaibkan.

***Kata kunci**: Masalah kesihatan mental, kepercayaan, sikap, doktor, stigma*

ABSTRACT

BACKGROUND

Doctors play an important role to treat patients with mental illness. Doctor's negative belief towards patients with mental illness could affect the quality of care to their patients. However, there is limited research related to belief towards mental illness among doctors. Therefore, the objective of this study is to determine the level of belief among medical doctors in HUSM about dangerousness, social dysfunction, incurability, embarrassment as well as its associated factors.

METHODOLOGY

A cross-sectional study was conducted among 180 medical doctors in Hospital Universiti Sains Malaysia from January 2020 to May 2020. The respondents were recruited using purposive sampling. They were required to complete a set of online self-administered questionnaires including sociodemographic profile and Belief toward Mental Illness Scale (BTMI) which was distributed through email and personal message. The data was analysed using the IBM SPSS Statistical Software Version 24.

RESULTS

The mean years of experience among the participants were 7.39 (5.46). Medical officers were the group that mostly responded, 111 (66.2%). Most of them from the non-psychiatry department compared to psychiatry, 162 (90.0%) but the distribution of participants from all department was evenly distributed.

About 33.9% had psychiatry experience and the majority had past contact with a patient with mental health problem 155 (86.1%) and 14.4% of the participants had experienced mental health problems. The mean scores of belief among medical doctors were relatively low with a mean value of 43.32 (14.74). All four subscale also showed low mean value with dangerousness 6.95 (3.94), social dysfunction 14.08 (5.68), incurability 14.37 (4.7), and embarrassment 7.92 (4.01). There were significant associations observed between doctors working in the psychiatry department with dangerousness, social dysfunction, and embarrassment subscale, where they have a lower score in the three subscales. There was also a significant association between Indian ethnicity and incurability, where they score lower in the incurability subscale.

CONCLUSION

In this study, we found doctors hold positive beliefs toward patients with mental health problems regardless of their sociodemographic background. There was a better belief about dangerousness, social dysfunction, and embarrassment among medical doctors from the psychiatry field.

Keywords**:** *Mental health problem, belief, attitude, doctors, stigma*

CHAPTER 1: INTRODUCTION

1.1 Prevalence of mental health problems and challenges

Mental health problems affected people in the world regardless of their age ethnicity, skin colour, or even religious as well as cultural background. A systematic review and meta-analysis published in 2014 across all studies worldwide done between 1993-2013, found on average of one out of 5 persons experienced mental disorder and 29.2% occur during their lifetime (Steel et al., 2014). Malaysia reported almost similar findings of 29.2 % prevalence of mental illness among adults age more than 16 years, increased compared to the prevalence in 1996 which was 10.9% (Institute for Public Health (IPH), 2015). These results indicate mental health problems becoming highly prevalent across countries including Malaysia.

As the prevalence of mental health problem increased addressing the challenges are important as they will contribute to the overall burden of the disease. A review about mental and substance use disorder in Global Burden of Disease (GBD) 2010 showed that mental health and substance used disorder had become the fifth-highest disorder of global disability-adjusted life years (DALYs) and the leading causes of years living with disability (YALs) in which the top 10 listed disorder were major depressive disorders, alcohol-related disorders, self-inflicted injuries, schizophrenia and bipolar mood disorder (Salleh, 2018). This means mental and substance use disorder contribute a great burden to overall health concerned probably in terms of premature mortality, morbidity as well as economic burden to cater to their need (Hassan et al., 2018). The disability associated mental health problems are not solely a direct deleterious effect of the problem itself but also contribute by the stigma surrounding the mental health problem (Corrigan and Watson, 2002). Stigma is one of the challenges (Corrigan and Watson, 2002; Hassan et

al., 2018) that government, health officers as well as people in the community need to take into serious consideration when faced with the mental health problem.

1.2 Belief about mental illness and its associated factors

Belief is the inner construct that holds up attitude which can be manifest as our behaviour (Mohan Kumar, 2018). Studies about belief and attitude were sought to investigate their view mostly about dangerousness, social dysfunction/distancing, embarrassment as well as incurability that associate with a mental health problem (Björkman et al., 2008; Rao et al., 2009; Smith and Cashwell, 2011). Results found that positive beliefs and attitudes will bring about supportive and inclusive behavior, but negative beliefs and attitudes will result in segregation, avoidance, misuse, and prohibition from any activities (Corrigan et al., 2004).

Researches about stigma which encompasses the negative belief and attitude had been done among the public, but little had looked into doctors specifically (Angermeyer and Dietrich, 2006; Gibbons et al., 2015; Jorm, 2000). Perceived dangerousness and the illness is incurable were commonly held belief toward the patient with mental health among the public (Jorm et al., 2012; Magliano et al., 2014; Reavley et al., 2014). Uncensored media portrayal about violence committed by the mentally ill patient and labeled as a mentally ill person is among the factors could reinforce this belief which subsequently leads to fear and social rejection by the society (Jorm et al., 2012). Unfortunately, medical doctors also are not immune to such belief, more prominently among the non-psychiatry doctors (Gateshill et al., 2011). Social dysfunction in stigma toward mentally ill patients was generally perceived as an inability to carry interpersonal, social, or occupational responsibility (Hirai et al., 2018). Social dysfunction can be a direct impact of mental illness itself as well as secondary to perceived stigma by others

among patients suffering from the disorders (Lysaker et al., 2007). Minaz et al. (2011) found almost 50% of participants consist of health professionals agree on general stigma statements that illustrate social dysfunction in a patient with mental illness e.g *"Someone with a history of mental illness should not be given a job of high responsibility"*.

The belief that mentally ill patient is incurable in the other hand stem from lack of understanding and knowledge about mental illness, as well as their belief about causal attribution of the illness. Luckily, several studies among the professionals' group found that they were more optimistic toward the possibility of recovery given by extra knowledge that they possibly learn during the career development (Mukherjee et al., 2002; Naeem et al., 2006; Sri and Dempster, 2015). However, it was shocking that among the medical professional, some of them held the belief that mental health problems were untreatable (Ewhrudjakpor, 2009; Hanafiah and Van Bortel, 2015). In this group, the influence of cultural belief is strong thus despite knowing, they still perceived that the illness is incurable.

In a recent review with regards to attitudes of health professional and medical student, the attitude was found to be increasingly positive over time (Lien et al., 2019), in contrast with another review which still found negative belief/attitude toward the patient with a mental health problem (Stone et al., 2019). There were several other literatures among health professionals which includes doctors, found that they still exhibit negative attitudes toward the population with a mental health problem (Castillejos Anguiano et al., 2019; Lam et al., 2013; Sri and Dempster, 2015; Winkler et al., 2016). A local study back in 2011, also observed similar findings which stigmatizing attitudes with lower propensity for care and higher avoidance toward the patient with schizophrenia among both doctors and other health staff (Minas et al., 2011). Even though the literature did found psychiatry doctors' beliefs and attitudes were better than non-

psychiatry, but they in terms of social distancing also share the same opinion with others (Wahl and Aroesty-Cohen, 2010). However, they were studies produced rather a contrast results establishing a generally positive attitude toward mentally ill patients among the health care professionals (Gateshill et al., 2011; Yuan et al., 2017), but those from the non-psychiatry field still hold the belief about the patient with a mental health problem is dangerous and unpredictable (Gateshill et al., 2011).

Several factors have been identified that can influence the levels of beliefs among doctors. Studies show that doctors with longer experiences (Mukherjee et al., 2002; Ndetei et al., 2011), have contact with mental health patient, as well as having personal experience (Arvaniti et al., 2009; Yuan et al., 2017) will exhibit less negative belief and attitude toward the patient with a mental health problem. . However, other studies did observe significant correlation with the opposite factors (Adewuya and Oguntade, 2007; Lam et al., 2013; Sri and Dempster, 2015; Yuan et al., 2017). Yet, some studies found no significant difference with the years of experiences among the doctors, indicating this variable may not affect the attitudes (Castillejos Anguiano et al., 2019; Hansson et al., 2013; Naeem et al., 2006). This finding may signify different perceptions that may exist with this variable, probably due to contrasting consequences, resulting from their exposure to people with mental health problems.

In terms of gender differences, studies found that female doctors commonly showed more negative attitudes toward patients with mental illness than male doctors (Adewuya and Oguntade, 2007; Sri and Dempster, 2015). In the other findings, female doctors were seen to endorse more positive attitudes as compared to male doctors, particularly toward patients with depression and heroin addiction (Noblett et al., 2015).

In any part of the world, culture and religion influence how the person attributes a symptom to the possible causes, influences their health-seeking behavior, and to whom

they will go for treatment. For a doctor, culture and religion in some way will affect their decision making in term of giving diagnosis as well as delivering care and treatment to the patient. Living in a multiracial population as in Malaysia where each race adopts different cultural and religious background will influence their belief about mental illness uniquely. Across all cultures in Malaysia, they believe the psychiatric symptoms were to be blamed on supernatural causes such as possession, witchcraft, black magic, or spirit (Ab Razak, 2017; Edman and Koon, 2000). Being the majority in the local population, Malay Muslims were hooked on their religious stand, where mental illnesses were considered as predestined and an act of punishment of one's wrongdoing or when they deviate from the original path (Edman and Koon, 2000; Heng and Gone, 2018). While for Chinese and Indian ethnicity, the religious influence was not so strong, in a recent qualitative study mental health professionals describe Chinese patients had better acceptance in mental illness diagnosis and modern treatment, but Indian ethnicity was not described (Hanafiah and Van Bortel, 2015). The literature explaining the influence of culture and religion on the belief about mental illness was mostly conducted among the general public, commonly related to their health-seeking behavior (Edman and Koon, 2000). The relationship between ethnicity and level of attitude was found in one study among mental health professionals in Singapore, that showed Indian ethnicity is negatively associated with belief on social distancing and social restrictiveness (Yuan et al., 2017). But, local data on cultural and religious influence among doctors were limited.

Among the studies found across the literature, there was no significant difference between surgical or medical specialties in terms of overall attitude toward the person with mental illness. They mostly have some opinion regarding the patient (Mukherjee et al., 2002; Sri and Dempster, 2015).

Doctors' beliefs and attitudes towards mental illness may influence the health services received or provided to the patient including the ability to recognize and treat a patient with a mental health problem. Primary care physicians mostly conceal their negative beliefs and attitudes and even good doctors harboring minor negative demeanors can be engaged with such undesirable behavior of discrimination toward the patients' studied (Corrigan et al., 2004; Wahl, 2003). In a study (Welch et al., 2015) regarding physician attitude when managing the mentally ill patient with diabetes mellitus, they reported more negative attitudes toward schizophrenia patients with bizarre affect. Medical professionals may not only miss the diagnosis of mental illness due to lack of knowledge and time but also due to negative stereotypes and stigmatizing attitudes in medical professionals with good knowledge about schizophrenia and depression (Aydin et al., 2003; Schulze, 2007)

As mentioned earlier, this kind of belief and attitude will finally jeopardize the patient quality of care and can lead to other consequences affecting not only the patient but also family, community as well as the authorities. As such, it infers the urgency to investigate belief and attitude not only from the perspectives of patients and the public but also from the perspectives of medical doctors.

1.3 Impact of stigma about mental illness among doctors

There were several ways to describe stigma, but in general, stigma describes as a negative connotation or remark that attributed to one's belief or attitude toward an individual or group of individuals, usually unfair interpretation that leads to numerous fatalistic consequences. The person with mental health problem was commonly being negatively stereotyped as dangerous, incompetent, and weak that lead to fear, avoidance, social distancing (*they should be avoided in the society*), as well as authoritarianism (*the*

decision about them should be made by others) that are seen in the stigmatized attitudes (Arboleda-Flórez and Sartorius, 2008; Yang and Link, 2015). They were subject to prejudice and discrimination seen in society. A lot of times, they had been denied from having a meaningful relationship, getting supportive community including friends and family, given equal educational and job opportunities, applying for insurance or financial support as well as access to quality medical services (Corrigan and Watson, 2002).

Stigma among the public was more often reported compared to those in medical professions (Angermeyer and Dietrich, 2006b; Rosemarie et al., 2012). Unfortunately, literature also found people in medical professions also exhibit stigma toward the patient with a mental health problem. (Castillejos Anguiano et al., 2019; Mukherjee et al., 2002; Serafini et al., 2011; Sri and Dempster, 2015). They tend to hold negative stereotype belief, prejudice, and discriminating behavior as seen in public populations (Corrigan et al., 2004; Yuan et al., 2017). If medical doctors continue to exhibit such belief, delivery of effective healthcare service would be compromised.

A significant portion of patients is at risk to have medical comorbidities such as cardiovascular problem, diabetes, hypertension, cancer (Alan et al., 2017) as well as surgical comorbidities (Abrams et al., 2010; Ehrlich et al., 2014; George et al., 1987) that leading to increased risk to have premature death (Hert et al., 2011; Saha et al., 2008; Walker et al., 2015). Literature also found that patient with mental health problem frequently reported their non-mental health symptoms were frequently attributed to their underlying mental illness or taken lightly (Hamilton et al., 2016; Thornicroft et al., 2007) that cause a delay in the actual diagnosis and appropriate treatment for their medical problem (Hendrie et al., 2013; Jones et al., 2008). These findings highlight the importance of non-psychiatry colleagues in providing non-bias services to the patients.

Negative stereotype belief, prejudice, little awareness, lacking optimism, as well as skills in delivering the treatment and promoting recovery, were among the sources of stigma revolving around health personnel including medical doctors (Knaak et al., 2017; Thornicroft et al., 2010). Negative beliefs usually influenced attitude or behaviour (Choudhry et al., 2016). Medical doctors who exhibit such perception would cause patients feeling being discriminate against, belittle, not equally treated, or even dehumanized in the patient (Hamilton et al., 2016; Knaak et al., 2017; Thornicroft et al., 2010). In turn, creating a proportion of self-stigma which will give an impact on patient belief toward the service provided and eventually reduce help-seeking behaviour (Vogel et al., 2013). As a result later initiation of treatment, a poor therapeutic alliance that further cause poorer mental health function and poor recovery (Ahmedani, 2011; Corrigan and Watson, 2002; Link and Phelan, 2001). All this suggest the significance of doctors' negative belief that would leave a great impact on the patient as well as increasing the overall burden of the disease.

1.4 Justification of study

This study aimed to investigate the belief of medical doctors towards persons with a mental health problem. There are plenty of studies globally and locally related to stigma, belief, and attitude of oneself toward mental health problems. Despite the increment of mental health research done in Malaysia, the gap within belief and attitude, and factors involved especially among the doctors still exist. This causes insufficiency to stimulate and establish a significant impact or changes within the healthcare system. The relationship of factors studied above to the level of belief and attitude among the doctors is not well deliberated in the local literature.

Thus, it is worth exploring further the factors involved as the result later can be used to suggest the point where intervention can be started especially when developing an anti-stigma campaign or advocacy. Furthermore, there were limited numbers of local data that had explored the belief of medical doctors specifically. It is also important so that the stakeholders can think seriously about the importance of mental health and being part of it in improving everyone's belief and attitude.

1.5 Objectives

1.5.1 General Objective

This study aims to assess the level of belief among medical doctors toward the patient with a mental health problem.

1.5.2 Specific Objectives

i. To determine the level of belief toward patients with mental health problem among medical doctors

ii. To determine the associations between sociodemographic factors and belief toward patients with mental health problems among medical doctors.

1.6 Methodology

A cross-sectional study was conducted from January 2020 to May 2020 among 180 medical doctors in Hospital Universiti Sains Malaysia using a set of online self-administered questionnaires which includes sociodemographic profile and Belief toward Mental Illness Scale (BTMI). The data entry and analysis were performed using the Statistical Package for Social Study (SPSS) Version 24.

1.7 Dissertation organization

This dissertation is arranged according to the Format B: Manuscript ready format based on the guideline by Postgraduate Office, School of Medical Sciences (2016). The following chapters would be the study protocol that has been submitted for ethical approval. Chapter 3 is the manuscript of 'Belief Toward Patient With Mental Health Problem Among Medical Doctors In Hospital Universiti Sains Malaysia' which is ready for submission to the Malaysian Journal of Medical Sciences with the author's instruction. The raw data is included in the attached CD.

CHAPTER 2: STUDY PROTOCOL

2.1 Introduction

Mental illnesses are increasingly recognized as one of the major public health concerns. The World Health Organization (WHO) 2001 reported that one out of four people in the world will be affected by mental or neurological illness at certain points in their lives. In 2020, mental illness was evaluated to be the second leading issue behind ischemic coronary illness (Murray and Lopez, 1996). In Malaysia, the mental illness pattern among grown-ups aged more than 16 years old had also increased to 29.2 % in 2015 as compared to 10.7% in 2011 (Institute for Public Health (IPH), 2015). Despite the increment of the disorder, people with mental health problems have consistently been exposed to various stigmatizing beliefs and attitudes that subjected them to fear, rejection, avoidance, and also discrimination (Azrin et al., 2003).

Traditionally, people with mental health problems have been subscribed to the belief that they are dangerous, unpredictable as well as violent and become victims of stigma. The negative beliefs and attitudes were prominent among the common individuals as supported by various researches that had been conducted earlier (Angermeyer and Dietrich, 2006; Rosemarie et al., 2012). Be that as it may, individuals who practice in medical fields had also expressed such negative behavior (Castillejos Anguiano et al., 2019; Mukherjee et al., 2002; Sri and Dempster, 2015) even though one would expect that they would have more welcoming and positive attitudes toward patients with a mental health problem as they came from a professional background with the basic medical knowledge.

There is growing evidence showing the comorbidity between mental health problems and other physical health such as cardiovascular problems, diabetes, hypertension, cancer (Alan et al., 2017), and even surgical comorbidities that are commonly associated with

poorer outcome (Abrams et al., 2010; Ehrlich et al., 2014). The literature showed that patients with mental illnesses are increasingly facing medical/surgical comorbidities such as diabetes, cardiovascular problems leading to increased risk of premature death (Hert et al., 2011; Saha et al., 2008; Walker et al., 2015). Therefore, medical professionals, especially doctors of different specialties, play a pivotal role in terms of giving integrated management for patients with mental illnesses that eventually will determine the outcome and prognosis of these patients.

Therefore, to improve the overall outcome of patients with mental health problems, all doctors possess a certain degree of understanding about what factors can influence the problems. Having said that, positive beliefs and attitudes toward patients with mental illness can improve the view about this group of patients and reduce the disparities received by them when seeking health services. This study will identify the beliefs and attitudes among doctors toward patients with mental illness and thus contribute to ideas and plans for intervention that can be done in the future based on the results obtained.

2.2 Literature Review

2.2.1 Overview of beliefs and attitudes

The term belief and attitude are commonly used to describe the knowledge, feeling, and opinion as well as behaviour of an individual or a group of persons over people who are perceived as different from the common one, for example, patients with mental health problems. Stigma is the common term to describe the disapproval or discrediting beliefs and attitudes that perceive an individual or a group of people phenotypes who differ from usual societal norms (Davis, 1964; Dudley, 2000). The concept of stigma originating from Goffman's initial conceptualization and subsequent works by other researchers had identified the six dimensions that comprise concealability,

course, disruptiveness, peril, aesthetic, origin, and controllability that lead to the development of stigma (Ahmedani, 2011).

Concealability or visibility of the stigmatized phenotypes somehow determines how this mental health problem will be perceived. It is assumed that the less visible the symptoms or signs of a stigmatized individual, the less stigmatized they are. As seen in a patient with schizophrenia who exhibits more visible symptoms as compared to those in major depressive disorder, studies have found that they received greater negative beliefs and attitudes compared to the latter (Fernando et al., 2010; Solanki et al., 2017).

The course is viewed as the chances of recovery and/or likelihood that patients with mental health problems will benefit from treatment. If a person with a mental health problem can achieve recovery and responds to treatment well, they can be less stigmatized. The concept of peril/dangerousness and disruptiveness of a patient with mental illness are possibly the main factors that lead to the development of stigma that had been frequently studied in studies of stigma among the public or professionals (Adewuya and Oguntade, 2007; Corrigan et al., 2004; Gateshill et al., 2011).

The aesthetic or the unpleasant nature is seen in a person with mental illness usually lead to the generalization toward the group with the same problem that subsequently results in labelling, avoidance, and stereotype behaviour. Origin is the concept that visualizes the root causes of mental illness; from the biological, psychological, or social points of view. This understanding of origin gives an impact on the view of controllability in which they are believed to have control over their experience and behaviour. If not, they will be blamed for their condition, seen as lacking in effort to control the symptoms and be held responsible for the consequences of their behaviour (Ahmedani, 2011).

The concept of stigma is likely formed by individuals or a group of persons with prior experience or contact with people with a mental health problem, from their cultural or religious beliefs, the awareness gained through mass media as well as personal knowledge from reading or learning about persons with mental illness (Corrigan et al., 2004). Consequently, patients with mental illness are negatively stereotyped as dangerous, incompetent and weak. They have been the subject of prejudice and discrimination seen in the society for example in being to have meaningful relationships, gaining a supportive community, including friends and family, securing educational and job opportunities, getting insurance or financial support as well as having access to quality medical services (Corrigan and Watson, 2002; Link, 1982). Those are the result of fear, avoidance, social distancing (they should be avoided in the society), as well as authoritarianism (the decision about them should be made by others) that are seen in the stigmatized attitudes (Arboleda-Flórez and Sartorius, 2008; Yang and Link, 2015).

Therefore, avoidance and social isolation are essential forms of discrimination that result in several negative outcomes for mentally ill individuals. Discrimination is perceived when people with mental illnesses are aware of the stigmatizing attitudes and discouragement of others toward them. It was found that when individuals with mental illness are perceived with the stigma, it will give an impact on the quality of life as well as the role in society (Alonso et al., 2009). Apart from that, people with mental illness also reported that their communities see them as incapable and do not understand or even trying to accept their illness (Dickerson et al., 2002). They also have difficulty in finding jobs and felt that people will treat them with injustice and will seclude them if they are aware of their mental illness (Dickerson et al., 2002).

Negative beliefs and attitudes were more prominent after the era of deinstitutionalization. When deinstitutionalization started, the previously

institutionalized people were returned to the community. This situation had brought many issues due to a lack of proper planning for this group of people. Many end up without shelter, support, or even appropriate management intervention.

The build-up of negative beliefs and attitudes from the society toward this unfortunate group triggered the development of self-stigma. The self-stigma left a major impact upon their emotions where they experienced mixed feelings including fearfulness, shamefulness, hurtful, discouragement, reduced self-esteem, and individual exclusion (Corrigan et al., 2009; Vogel et al., 2013).

The interaction between various emotional burdens would have resulted in the patients becoming socially withdrawn and eventually weakening help-seeking behaviour that can be a potential barrier from receiving effective treatment. They will be less likely to disclose the information about the disorder, be socially withdrawn and thus resulting in impaired overall function (Corrigan and Rao, 2012; Corrigan et al., 2009).

Following deinstitutionalization, public awareness and concern among these people with mental health problems have been raised and become more apparent. Since then, a growing number of studies among the public including doctors and other health staff have been published to investigate the level and the role of stigma among the general population toward this unfortunate group until now (Angermeyer and Dietrich, 2006; Borinstein, 1992; Choudhry et al., 2016; Gibbons et al., 2015; A. Jorm, 2000). Results have also shown that positive beliefs and attitudes will bring about supportive and inclusive behavior, but negative beliefs and attitudes will result in segregation, avoidance, misuse, and prohibition from any activities (Corrigan et al., 2004).

However, most of the local literature is not available and does not highlight these issues sufficiently in the doctors' group. The results found are also inconsistent. The studies on stigma found mental illness to be one of the least prioritized problems by the

stakeholders, governmental or non-governmental sectors leading to a lack of budget given to the mental health services and thus limited resources as well as the options of treatment that can be provided to them (Link and Phelan, 2006; Schulze, 2007).

The negative beliefs and attitudes are far-reaching and have a major impact not only on the person but also on the family, community, and financial implications. As the services are moving toward community integration, the stigma will become a major public health concern in the near future. Therefore, it is worth exploring further this issue to find ways to enhance proper beliefs and attitudes, and at the same time addressing the stigmatizing belief attitude.

2.2.2 Beliefs & Attitudes toward mental illness among medical doctors

In general, doctors are commonly perceived as significant individuals who can deal with people with mental health problems well without any prejudice and deliver the treatment fairly. However, plenty of studies found that doctors also exhibit negative attitudes toward the population with a mental health problem (Fernando et al., 2010; Jury, 2014; Mukherjee et al., 2002; Sri and Dempster, 2015). A study that was conducted locally in one of the general hospitals in Kuala Lumpur noted that the stigmatizing attitudes toward people with mental illness were common among both doctors and other health staff when comparing between two groups of patients, that is, those with diabetes and schizophrenia (Minas et al., 2011). The findings noted a lower propensity for care and support for the schizophrenia group who received higher avoidance and expected negative belief and attitude as compared to diabetic patients. In contrast to another study that produced results establishing a generally positive attitude toward mentally ill patients among health care professionals (Gateshill et al., 2011). However, those who were not in the mental health group felt that patients with general mental illness are dangerous and unpredictable. As such, it infers the urgency to investigate stigma not only from the

perspectives of patients and the public but also from the perspectives of health professionals, most importantly doctors from psychiatry as well as the non-psychiatry colleague. In conclusion, stigma and discrimination among medical doctors will eventually lead to poor quality of services delivered.

As seen among the public population, the beliefs and attitudes toward mental illness among the professionals are equally affected by specific mental health problem diagnosis. For example, studies consistently showed the negative attitudinal response toward the patient with schizophrenia and drug addiction (Mukherjee et al., 2002; Noblett et al., 2015; Solanki et al., 2017; Sri and Dempster, 2015). They view them as dangerous, unpredictable, and difficult to talk to (Naeem et al., 2006; Noblett et al., 2015).

Some studies found almost similar findings and obvious negative attitudes observed toward patients with depression (Fernando et al., 2010; Solanki et al., 2017). The literature also revealed that doctors are optimistic in regards to the treatment outcome and process of recovery (Mukherjee et al., 2002; Naeem et al., 2006; Sri and Dempster, 2015). However, some doctors perceived patients with mental illness as having poor prognosis (Adewuya and Oguntade, 2007). This difference probably originates from the understanding of the etiology of mental illness, for example, the studies that were conducted among the Nigerian doctors noted that the belief in supernatural causes is abundant (Adewuya and Oguntade, 2007; Ewhrudjakpor, 2009). Hence, they view a bad outcome for the patient. Investigating the attitudinal beliefs of different types of mental health problems deserve further investigation since the results are still inconsistent. Thus, a specific measure can be taken to intervene and improve the belief and attitude toward specific conditions by advocating during educational sessions.

A study conducted in Singapore that only include mental health professionals and comparing them with the general population showed that the professional groups had

significantly better attitudes as compared to the latter (Yuan et al., 2017). Although there has been one study comparing the attitude between mental health professionals and people with mental illness, there is no difference in terms of negative attitudes (Hansson et al., 2013). Both studies used different instruments to measure the attitudes which could have led to contradicting results. Social discrimination as part of the attitudinal measurement was found to be one of the negatively held attitudes among medical doctors (Arvaniti et al., 2009; Yuan et al., 2017). As contrasted with another study, mental health professionals were found to be less distant socially, meaning that they are more acceptable to be in common or get into closest proximity with people with mental illness (Smith and Cashwell, 2011).

Doctors' beliefs and attitudes towards mental illness may influence the health services received or provided to the patient including the ability to recognize and treat a patient with a mental health problem. Primary care physicians mostly conceal their negative beliefs and attitudes and even good doctors harboring minor negative demeanors can be engaged in such undesirable behavior of discrimination toward the mentally ill patient (Corrigan et al., 2004; Wahl, 2003). In another study regarding physician attitude when managing the mentally ill patient with diabetes mellitus, they reported more negative attitudes toward schizophrenia patients with bizarre affect (Welch et al., 2015). Medical professionals may not only miss the diagnosis of mental illness due to lack of knowledge and time but also due to negative stereotypes and stigmatizing attitudes toward patient with mental illness (Aydin et al., 2003; Schulze, 2007). As mentioned earlier, this kind of belief and attitude will finally jeopardize the patient quality of care and can lead to other consequences affecting not only the patient but also family, community as well as the authorities. Therefore, it is worth exploring this issue to visualize the level of their beliefs and attitudes.

Doctors are also part of contributors to the development of stigma. The stigmatizing attitudes among doctors are not often acknowledged or addressed, as they are viewed as professionals. But with the advancement of technology and the use of social media as the medium of spreading information, more professionally led anti-stigma programs have been criticized for focusing only on the society excluding the health professionals who are one of the contributors to the development of stigma (Schulze, 2007).

2.2.3 Association between sociodemographic factors of the doctors with their level of belief and attitude

Several factors have been identified that can influence the levels of beliefs among doctors. Studies show that senior doctors exhibit less negative or stigmatizing attitudes toward a person with mental illness in which this may reflect their experiences in the field show (Mukherjee et al., 2002; Ndetei et al., 2011). It was also found that lesser years of experiences are associated with more negative perceptions toward psychiatry patients (Adewuya and Oguntade, 2007; Sri and Dempster, 2015). Yet, some studies found no significant difference with the years of experiences among the doctors, indicating this variable may not affect the attitudes (Castillejos Anguiano et al., 2019; Hansson et al., 2013; Naeem et al., 2006).

In terms of gender differences, studies found that female doctors commonly showed more negative attitudes toward patients with mental illness than male doctors (Adewuya and Oguntade, 2007; Sri and Dempster, 2015). In the other findings, female doctors were seen to endorse more positive attitudes as compared to male doctors, particularly toward patients with depression and heroin addiction (Noblett et al., 2015).

Another factor that is usually measured in the study of belief and attitude is familiarity and the presence of a close relationship or experience with patients having a

mental illness. A few studies noted that this factor correlates significantly with improvement in their perceptions (Arvaniti et al., 2009; Yuan et al., 2017). However, a different result was seen in another study in which a negative perception was significantly correlated with having contact with a psychiatric patient before (Sri and Dempster, 2015). This finding may signify different perceptions that may exist concerning this variable, probably due to contrasting consequences, resulting from their exposure to people with mental health problems.

The relationship between ethnicity and level of attitude was found in one study that showed Indian ethnicity is negatively associated with social distancing and social restrictiveness. Other factors that were also found to have affected the level of belief or attitude are marital status (Sri and Dempster, 2015) and the education level. The higher education level also shows to be negatively associated with attitude specifically within the domain of prejudice and misconception in the same study (Yuan et al., 2017). Among the studies found across the literature, there was no significant difference between surgical or medical specialties in terms of overall attitude toward the person with mental illness. They mostly have some opinion regarding the patient (Mukherjee et al., 2002; Sri and Dempster, 2015).

Despite the increment of mental health research done in Malaysia, the gap within belief and attitude, and factors involved especially among the doctors still exist. This causes insufficiency to stimulate and establish a significant impact or changes within the healthcare system. The relationship of factors studied above to the level of belief and attitude among the doctors is not well deliberated in the local literature. Thus, it is worth exploring further the factors involved as the result later can be used to suggest the point where intervention can be started especially when developing an anti-stigma campaign or advocacy. It is also important so that the stakeholders can think seriously about the

importance of mental health and being part of it in improving everyone's belief and attitude.

2.3 Problem Statement

i. There are limited local studies that investigate the issues of belief and attitude among doctors specifically toward patients with mental health problems.

ii. There is also a lack of understanding of the factors associated with negative or positive beliefs or attitudes toward patients with mental health problems among the study populations that may have an impact on patient care.

2.4 Justification of the study

As projected by WHO, mental health problems will increase by 2020 (Dye et al., 2013). With the increasing number of mental health problems globally including in the local population, it is expected that the number of cases seeking treatment for their mental health problem as well as their other comorbidities will increase. Therefore, medical doctors from both psychiatry and non-psychiatry fields play important roles in managing this group of patients. They can present with either primary mental health issues or other health comorbidities that may need medical or surgical intervention. A doctor must identify the real issues on why patients with mental health problems seek treatment and ensure not being bias by attributing the symptoms only to the underlying mental illness.

Belief and attitude toward mental health problem can influence how a doctor interpret the symptoms even though they may not relate to the underlying mental illness. Unfortunately, earlier studies gave the focus on public and mental health professionals, little that investigate specifically among doctors. The available literature found medical doctors despite their professional background could not escape from holding negative

beliefs and attitudes toward mental illness, hence compromising their role as the treating doctors. Studies of belief and attitude among doctors also had produce conflicting results and were mostly conducted in the western region. Therefore, there is a gap between this literature that needs to be further explored.

Theoretically, this study aimed to extend the literature by investigating the belief and attitudes of medical doctors as well as to identify factors that may influence them. This guided by a few theories that explained how belief and attitude toward mental illness developed and affected them including labeling theory and attributional theory (Choudhry et al., 2016; Corrigan et al., 2003; Socall and Holtgraves, 2017).

Methodologically, this study focused on doctors who are figures that play a crucial role in the management of the patient with a mental health problem, which their perception is important in delivering fair services. This study used two different sets of questionnaires with one generally assess the belief while on the other hand assessing attitude based on the different vignette. The use of those questionnaires can provide information on doctor's beliefs about the patient with a mental health problem and their behavior in response to a different kind of patient with a mental health problem. The result of this study perhaps will enrich the literature review on the topic and can be used by future research as references. This research also will produce information and awareness to the higher authorities, policymakers as well as other stakeholders about the belief and attitude held by the officers toward patients with mental health problems.

Practically, this study potentially could provide a framework to the authorized bodies in structuring appropriate programs and provide ideas for future intervention to address and improve the beliefs and attitudes among the medical doctors, if they are negative. Being a crucial figure in managing patients with mental illness, doctors are expected to have positive beliefs and attitudes.

2.5 Research Objectives

2.5.1 General Objective

To determine the level of beliefs and attitudes among medical doctors toward patients with a mental health problem.

2.5.2 Specific Objectives

i. To determine the level of beliefs toward patients with mental health problems among medical doctors.

ii. To determine the level of attitudes of medical doctors toward patients with mental health problems.

iii. To determine the association between sociodemographic factors and levels of beliefs toward patients with mental health problems among medical doctors.

iv. To determine the association between sociodemographic factors and levels of attitudes toward patients with mental health problems among medical doctors.

2.6 Research Questions

i. What is the medical doctors' level of belief toward patients with a mental health problem?

ii. What is the medical doctors' level of attitude toward patients with a mental health problem?

iii. Is there any significant association between sociodemographic variables and medical doctors' beliefs toward the patient with mental health problems?

iv. Is there any significant association between sociodemographic variables and medical doctors' attitudes toward patients with a mental health problem?

2.7 Research Hypothesis

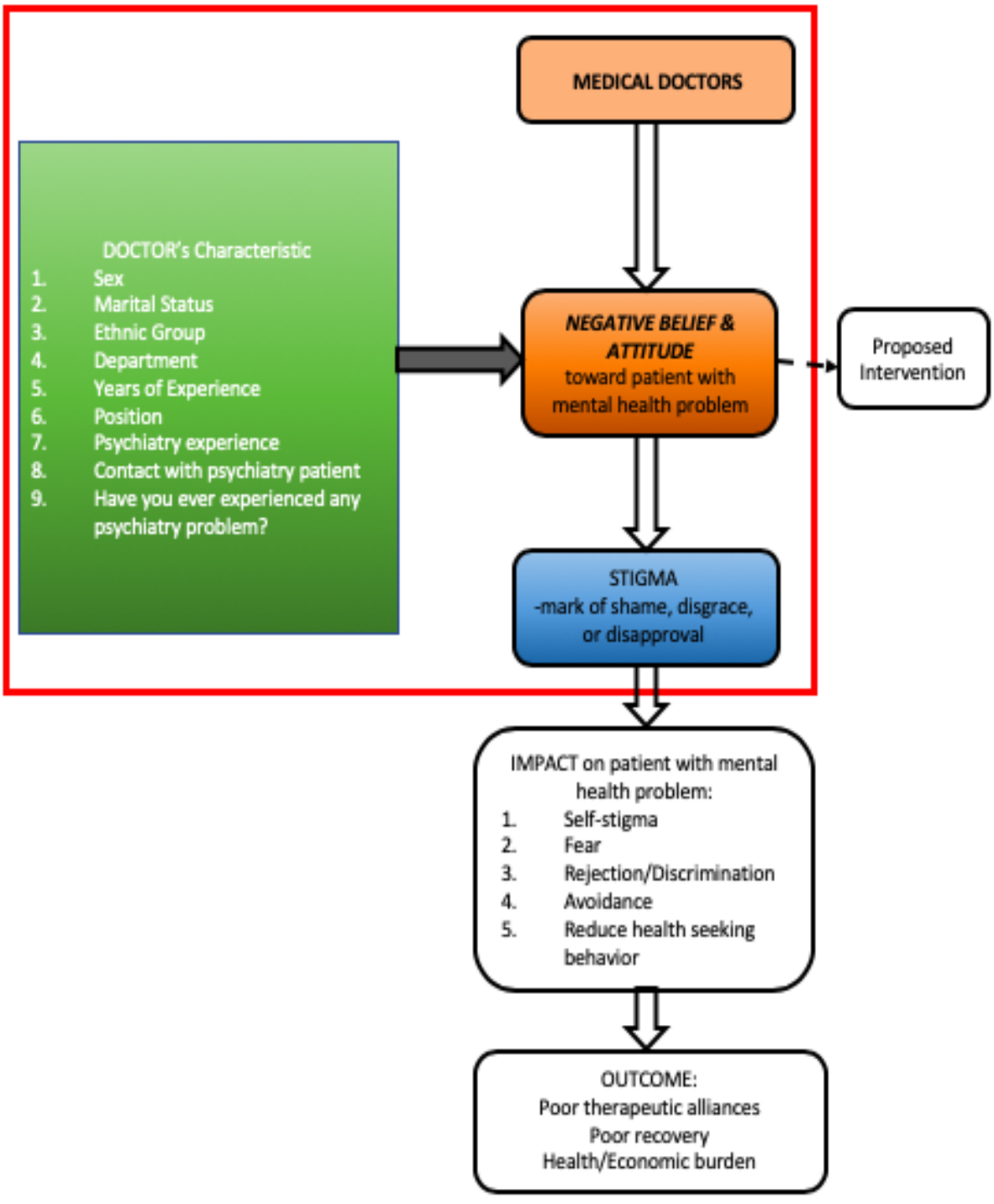
i. The medical doctors have a lower mean score for the belief of dangerousness, social dysfunction, incurability, and embarrassment towards the patient with the mental health problem.

ii. The medical doctors have positive scores (between +5 to + 10) toward each patient with a mental health problem which indicates a positive attitude.

iii. There is no significant association between sociodemographic variables with the level of belief toward the patient with mental health problems among medical doctors.

iv. There is no significant association between sociodemographic factors with the level of attitude toward the patient with mental health problems among medical doctors.

2.8 Conceptual Frameworks



2.9 Methodology

2.9.1 Study Design

This is a cross-sectional study

2.9.2 Study Location

This study will be conducted in the School of Medical Sciences and School of Health Sciences, Universiti Sains Malaysia (USM).

2.9.3 Study Period

This study period is from January 2020 till May 2020.

2.9.4 Study Population

i. Reference population: All doctors in Kelantan

ii. Source of the population: All doctors working in School of Medical Sciences and School of Health Science USM

iii. Sampling frame: All doctors working in the School of Medical Sciences and School of Health Science USM from December 2019 until June 2020 and fulfill the selection criteria

iv. Study population: All doctors working in Hospital USM during the study period that fulfill the inclusion criteria for this study

2.9.5 Sampling Method

The sampling method is a purposive sampling method by recruiting all medical doctors in the School of Medical Sciences and School of Health Science USM during the study period.

2.10 Operational Definition

2.10.1 Belief

In general, the belief was defined as the cognitive aspect (Fishbein and Raven, 1962) (e.g. knowledge, feeling, perception, etc.) about something that can be good or bad. For this study, belief about mental illness among medical doctors was measure using a scale that contains four main domains including dangerousness, social dysfunction, incurability, and embarrassment about the patient with a mental health problem, which would reflex their view or perception on the topic studied. The score will be total up based on each domain.

2.10.2 Attitude

Attitude had been attributed to the effective or motivational aspect (Fishbein and Raven, 1962) when oneself behaving toward something that can also be good or bad. In this study, the attitude was measured using a scale consisting of seven different vignettes illustrating different cases including religious person, patient with medical illness, criminals, and four vignettes with the mental health problem. The study population would answer how they behave in the same situation with a different person in the vignettes and the score will be total up.

2.10.3 Medical Doctors

The medical doctors in this study refer to the person who had obtained the Bachelor in Medicine & Surgery, and Doctor of Medicine, currently studying or working in HUSM.

2.10.4 Mental health problem

In this study, mental health problem refers to disorder included in Diagnostic Statistical Manual 5 (DSM 5) as well as International Statistical Classification of Disease 10 (ICD 10), code F01-F99. Mental, Behavioural and Neurodevelopmental disorders.

2.10.5 Sociodemographic profile

Sociodemographic profile in this study refers to all the possible predictors/factors which would have an association with belief and attitude based on the literature search which includes sex, ethnic group, department, position, years of experiences, and so forth.

2.11 Inclusion Criteria

1. All medical doctors who have completed their bachelor's in medicine.
2. All medical doctors who are registered under the School of Medical Sciences and School of Health Sciences, USM, or working in Hospital USM during the study period including housemen, medical officers (service/post-graduate master students), and specialists.
3. All medical doctors in all medical fields and departments (including psychiatry) are present in the selected study location.
4. All medical doctors who can complete the online survey in English.

2.12 Exclusion Criteria

1. Medical doctors who are not Malaysians.
2. Qualified medical doctors who are not employed in the study place.

2.13 Vulnerability of the study subjects

The subjects are not considered vulnerable as they are professionals who can decide whether they want to consent or not. Their participation will be based on their agreement to participate in this study.

2.14 Sample Size Determination

All objectives are considered for sample size determination.

For the first objective, the sample size is calculated using a single mean formula. Based on the mean level and standard deviation of belief toward mental illness from a previous study (Effiong et al., 2019), the calculated sample size is 100.

1 mean – Estimation	
Standard deviation (σ)	19.270
Precision	4.000
Significance level (α)	0.050
Drop-out	10%
Sample size	90
Sample size (with drop-out)	100

For the second objective, the sample size is calculated using the single mean formula. Based on the mean level and standard deviation of attitude toward mental illness from a previous study entitled Stigma and Attitudes toward Patients with Psychiatric Illness among Postgraduate Indian Physicians (Chandramouleeswaran et al., 2017); the calculated sample size is 85.

1 mean – Estimation	
Standard deviation (σ)	4.440
Precision	1.000
Significance level (α)	0.050
Drop-out	10%
Sample size	76
Sample size (with drop-out)	85

Using the same literature (Effiong et al., 2019) to calculate belief about mental illness for the third objective, the sample size is calculated using the 1-mean formula where the impact of the socio-demographic factor was studied. Based on the standard deviation the calculated sample size is 162.

1 mean – Estimation	
Standard deviation (σ)	24.560
Precision	4.000
Significance level (α)	0.050
Drop-out	10%
Sample size	145
Sample size (with drop-out)	162

For the fourth objective, the sample size is calculated using the 2-mean formula. Based on the standard deviation of the difference of attitude toward mental illness from a previous study entitled Stigma and Attitudes toward Patients with Psychiatric Illness among Postgraduate Indian Physicians (Chandramouleeswaran et al., 2017); the calculated sample size is 96.

2 means (paired/cross-over) – Hypothesis Testing	
Standard deviation of difference(σ)	6.612
Expected difference (Δ)	2.000
Significance level (α)	0.050
Power (1-β)	0.800
Drop-out	10%
Sample size	86
Sample size (with drop-out)	96

Thus, from the calculated sample considering all factors that may influence the respondent, the final sample size for the study is rounded up to 180.

2.15 Data Collection Procedure

1. Data collection was commenced after receiving approval from the Ethics Committee.
2. As described above, the convenience sampling method will be used.
3. Permission to conduct this study will be obtained from the Deans of the School of Medical Science and Health Science as well as the Director of Hospital USM.
4. An approximate number of the participant at the current moment is 1500, the data was roughly given by
5. The list of doctors registered and work in those units was obtained through their respective offices.
6. A briefing about the purpose and nature of the study was carried out for all heads of every department.
7. The link of questionnaires for the study was given to them, which was then sent to their respective colleague staff.
8. Participants were recruited through online advertising on the social network – WhatsApp and also through e-mail.
9. Questionnaires including proforma, belief toward mental illness (BTMI) scale, and attitude toward mental illness questionnaire (AMIQ) were provided in the Google form format. The questionnaires took about 10-15 minutes to be completed. Completion and submission of the questionnaires were considered valid consent. The response was limited to once per respondent, as they need to sign-in to their Google accounts to answer the questionnaires. There will be no missing data as the questionnaires are set in the manner that the participant had to answer each question before proceeding to the next.

2.16 Research Tools

In this study, the investigators use three self-rated questionnaires.

1. Sociodemographic profile
2. Belief Toward Mental Illness Scale (BTMI)
3. Attitude Toward Mental Illness Questionnaire (AMIQ).

2.16.1 Sociodemographic Profile

The sociodemographic profile sheet consists of variables like sex, ethnic groups, department, years of experience, position, psychiatry experiences, contact with psychiatry patient, the experience of any psychiatric problem, and marital status.

2.16.2 Belief Toward Mental Illness Scale (BTMI)

The BTMI is a self-administered measure. It was originally designed by Hirai & Clum to measure the negative stereotypical belief about mental illness among two different populations including 216 American and Asian students (Hirai et al., 2018). BTMI consists of 21-items where the measurement is based on a 6-point Likert scale. The response ranges from 0 (completely disagree) to 5 (completely disagree). The higher score reflects higher stigmatizing or negative beliefs toward the patient with psychiatric illness. Four sub-scales are identified with a good fit model (Hirai et al., 2018) including dangerousness, social dysfunction, incurability, and embarrassment. The Cronbach's alpha for each factor extracted is within a good range from 0.70 to 0.84. The psychometric properties of this scale are valid and reliable across earlier studies that had been conducted both among the western and Asian cultures (Royal and Thompson, 2013; Saint Arnault et al., 2017) deeming it to be a good tool to assess beliefs regarding mental illness.

2.16.3 Attitude Toward Mental Illness Questionnaire (AMIQ)

This scale has been originally adapted from *Cunnigham* and had been validated by *Luty* in his study entitled Validation of a Short Instrument to Measure Stigmatised Attitudes towards Mental Illness (Cunningham et al., 1993; Luty et al., 2006). The Attitudes to Mental Illness Questionnaire (AMIQ) is a simple, self-rated 5-items questionnaire where the answer is based on the seven vignettes that illustrate cases of drug addiction, depression, alcohol addiction, diabetes, schizophrenia, and religious person. Some amendments to the vignettes have been done, in which the name of the person stated in the vignettes is changed to make it look closer to the local culture. It has a good psychometric properties as results showing test-retest reliability at 2–4 weeks was P = 0.702 (n = 256), construct validity was α= 0.933 (n = 879) and alternate test reliability compared with Corrigan et al.'s attributions questionnaire was r = 0.704 (n = 102). The questionnaire also showed a good face validity as the vignettes describing highly stigmatized individuals (drug abuse, alcohol addiction, schizophrenia, and depression) consistently showed negative scores while vignettes about the non-stigmatized individual (diabetes and Christian) produce a positive score. Vignettes are presented in random order on the questionnaire. The individual questions are scored on a 5-point Likert scale (maximum +2, minimum -2) with blank questions, "neutral" and "don't know" is scored 0. The score for the five questions is added giving a total score for each vignette between -10 and +10. The positive score will indicate a positive attitude and the negative score will indicate a negative attitude.

2.17 Variables

2.17.1 Independent Variables

2.17.1.1 Sociodemographic data

a. Sex (male/female)
b. Race (Malay, Chinese, Indian or others (Iban/Kadazan/etc)
c. Department (Medical, Paediatric, Surgical, Otorhinolaryngology, Family Medicine, Ophthalmology, Orthopaedic, Pathology, Public Health, etc.)
d. Working experience as a doctor: …… years/months
e. Position: Housemen, Medical Officer, Specialist/Consultant
f. Psychiatry Experience: Yes/No
g. Contact with psychiatry patient: Yes/No
h. Have you ever experienced any mental health problems? Yes/No
i. Marital status: Married/Single/Divorcee

2.17.2 Dependent Variables

The level of belief is based on four main domains including dangerousness, social dysfunction, incurability, embarrassment as well as the level of attitude toward mental health problem.

2.18 Data Entry and Statistical Analysis

All data collected will be analysed using the Statistical Package for Social Study (SPSS) Version 24.0. Both univariate and multivariate analyses will be performed accordingly.

2.19 Statistical Analysis to be Used for Each Objective

Objectives	Instruments	Statistical Analysis
To determine the level of belief among medical doctors toward patients with a mental health problem.	BTMI	Descriptive analysis
To determine the level of attitudes among medical doctors toward patients with a mental health problem.	AMIQ	Descriptive analysis
To determine the associations between sociodemographic factors and level of belief among medical doctors toward patients with a mental health problem.	Sociodemographic Profile BTMI	Linear Regression
To determine the associations between sociodemographic factors and the level of attitudes among medical doctors toward patients with a mental health problem.	Sociodemographic Profile AMIQ	Logistic Regression

2.20 Dummy Tables

2.20.1 Descriptive Statistic of Socio-demographic variables of medical doctors in HUSM

Table 1: Socio-demographic characteristic of respondents

Variable	Mean (SD)	Frequency, n (%)
Sex		
Male		
Female		
Race		
Malay		
Chinese		
Indian		
Others		
Department		
Psychiatry		
Non-psychiatry		
Duration of working experience …… months/years		
Position		
Housemen		
Medical Officer		
Specialist/Consultant		
Psychiatry Experience:		
Yes ……. (years/months)		
No		
Contact with psychiatry patient:		
Yes		
No		
Have you ever experienced any mental health problems?		
Yes		
No		
Marital Status		
Married		
Single		
Divorcee/Widow		

2.20.2 Descriptive analysis of major variables

Table 2: Mean scores of beliefs among medical doctors

Variables	**Mean**	**SD**
Dangerousness		
Social dysfunction		
Incurability		
Embarrassment		
Total		

Table 3: Score of individual vignettes in the attitude to mental illness questionnaire

Variable	**Minimum Score**	**Maximum Score**	**Mean Score**	**SD**	**95% CI**
Heroin Dependence					
Depression with suicidal					
Alcohol Dependence					
Convicted thief					
Diabetes					
Schizophrenia					
Buddha					

SD: Standard deviation CI: Confidence Interval

2.20.3 What is the relationship between sociodemographic factors and level of belief among medical doctors?

Table 4: Association socio-demographic characteristics towards dangerousness

Variables	**SLR**		**MLR**	
	Regression coefficient, b	p-value	Regression coefficient,b	p-value
Gender				
Male				
Female				
Ethnicity				
Malay				
Chinese				
Indian				
Others				
Years of experience				
< 10 years				
10 years and above				
Position				
Houseman				
Medical officer				
Specialist/Consultant				
Psychiatry experience				
No				
Yes				
Contact with mental health patient				
No				
Yes				
Experience mental health problem				
No				
Yes				
Marital status				
Single				
Married				
Divorce/Widow				
Department				
Non-psychiatry				
Psychiatry				

*b=regression coefficient.

Table 5: Association socio demographic characteristics towards social dysfunction.

Variables	**SLR**		**MLR**	
	Regression coefficient, b	p-value	Regression coefficient,b	p-value
Gender Male Female				
Ethnicity Malay Chinese Indian Others				
Years of experience < 10 years 10 years and above				
Position Houseman Medical officer Specialist/Consultant				
Psychiatry experience No Yes				
Contact with mental health patient No Yes				
Experience mental health problem No Yes				
Marital status Single Married Divorce/Widow				
Department Non-psychiatry Psychiatry				

*b=regression coefficient.

Table 6: Association socio demographic characteristics towards incurability.

Variables	**SLR**		**MLR**	
	Regression coefficient, b	p-value	Regression coefficient,b	p-value
Gender Male Female				
Ethnicity Malay Chinese Indian Others				
Years of experience < 10 years 10 years and above				
Position Houseman Medical officer Specialist/Consultant				
Psychiatry experience No Yes				
Contact with mental health patient No Yes				
Experience mental health problem No Yes				
Marital status Single Married Divorce/Widow				
Department Non-psychiatry Psychiatry				

*b=regression coefficient.

Table 7: Association socio-demographic characteristics towards embarrassment.

Variables	**SLR**		**MLR**	
	Regression coefficient, b	p-value	Regression coefficient,b	p-value
Gender Male Female				
Ethnicity Malay Chinese Indian Others				
Years of experience < 10 years 10 years and above				
Position Houseman Medical officer Specialist/Consultant				
Psychiatry experience No Yes				
Contact with mental health patient No Yes				
Experience mental health problem No Yes				
Marital status Single Married Divorce/Widow				
Department Non-psychiatry Psychiatry				

*b=regression coefficient.

2.20.4 What is the association between sociodemographic factors and level of attitude among medical doctors?

Table 8: Association between socio-demographic factors and attitude among medical doctor

Factors	**SLR[a]**			**MLR[b]**		
	b[c] (95% CI[d])		p-value	b[c] (95% CI[d])		p-value
Sex Male Female Race Malay Chinese Indian Others Department Psychiatry Non-psychiatry Duration of working experience …… months/years Position Housemen Medical Officer Specialist/Consultant Psychiatry Experience: Yes ……. (years/months) No Contact with psychiatry patient: Yes No Have you ever experienced any mental health problem? Yes No Marital Status Married Single Divorcee/Widow						

2.21 Limitation of Study

2.21.1 Sampling method

The nature of sampling method which is non-probability sampling may not reflect the overview of the target population of this particular study.

2.21.2 Social Desirability Bias

As this study is assessing subjects' belief and attitude that may reflect individual's perception about the topic being investigated, there is a tendency for the respondent to answer in a manner that is favourable.

2.22 Ethical Considerations

This study will be conducted in concordance with Declaration of Helsinki and follows Malaysian Good Clinical Practice (GCP) Guidelines. Ethical clearance will be obtained from Universiti Sains Malaysia Human Research Ethics Committee before commencement of the research.

2.23 Declaration of Absence of Conflict of Interest

The researcher declares that there is no conflict of interest involving the researcher and the study subjects.

2.24 Privacy and Confidentiality

The researcher will ensure the confidentiality by making the survey form anonymous. Data collection and access to any personal information will only commence upon the return of consent forms by the subjects. Only research team members can access the data. Data will be presented as grouped data and will not identify the respondents individually.

2.25 Recruitment Incentives

No payment will be made to the subjects for their participation in this study. Small incentives will be given as tokens of appreciation of participation, and only disclosed after the participation is completed, to avoid distorting the decision making about participation.

2.26 Community Sensitivities and Benefits

When assessing belief and attitude by doctors about mental illness, the topic investigated may trigger the need to answer in a socially desired way as they may worry that people would know their actual belief and attitude. However, the participants will be informed that this study aims only to assess the levels of belief and attitude as well as factors related to them for educational use only and as guide in future mental health stigma intervention programme. The results will not be disclosed to anyone other than the participants themselves, unless if they permit the researchers to do so.

2.27 Expected Research Outcome

The proposed research is aimed at providing an understanding on the various perspectives concerning the belief and attitude toward mental health problems and issues surrounding it to the health community. Apart from that, the data will also be beneficial to future researchers, policy makers, professionals, as well as the public to get to do further investigations on the topic. Besides that, the potential factors that may influence the belief and attitude toward mental health problem can be investigated or intervened as to improve the topic studied. It is also hoped that this study will provide awareness to the higher authorities regarding the presence of negative beliefs and attitudes among the medical doctors so that appropriate measures or intervention such as training programs to reduce stigmatizing attitude among the professionals group can be carried out in the future.

2.28 Research Plan and Time Frame

2.28.1 Study Flow Chart