WORKLOAD PRESSURE AND JOB STRAIN AMONG MEDICAL OFFICERS IN HEALTH CLINICS, KELANTAN

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UNIVERSITI SAINS MALAYSIA

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by

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ABSTRAK

TEKANAN BEBAN KERJA DAN KETEGANGAN KERJA DALAM KALANGANPEGAWAI PERUBATAN DI KLINIK KESIHATAN, KELANTAN

Latar belakang: Pengaturan taburan tenaga kerja dan kawalan tekanan kerja merupakan antara faktor yang memainkan peranan penting dalam menentukan peningkatan kualiti dan kelestarian perkhidmatan kesihatan. Kajian ini bertujuan untuk menentukan tekanan beban kerja di klinik kesihatan (KK) dan ketegangan kerja dalam kalangan pegawai perubatan yang bertugas di KK, serta melihat hubungan di antara kedua-dua faktor tersebut.

Metodologi: Kajian ini merupakan gabungan survei rekod tekanan bebanan kerja melibatkan KK pada tahun 2018, dan kajian primer mengenai ketegangan kerja dalam kalangan pegawai perubatan yang bertugas di KK terpilih. Kajian ini menggunakan kaedah pensampelan kelompok di mana tujuh buah daerah telah dipilih (Kota Bharu, Tumpat, Pasir Mas, Tanah Merah, Bachok, Pasir Puteh, dan Machang). Pertama, tekanan beban kerja ditentukan oleh *Workload Indicator of Staffing Needs* (WISN) yang diperkenalkan oleh Pertubuhan Kesihatan Sedunia (WHO). Bebanan kerja adalah tinggi apabila dapatan menunjukkan nisbah antara bilangan doktor yang sedia ada dan yang diperlukan kurang daripada satu. Sementara itu, bagi menentukan ketegangan kerja pegawai perubatan di KK, mereka diminta untuk menjawab *Job Content Questionnaire* (JCQ) yang telah diterjemahkan ke dalam Bahasa Malaysia. Terdapat tiga komponen yang terlibat dan dua daripadanya (kebolehdapatan membuat keputusan dan beban psikologi) akan digunakan untuk mengukur ketegangan kerja. Maklumat dibentangkan secara deskriptif menggunakan

nilai purata dan sisihan piawai serta frekuensi dan peratusan bergantung kepada jenis data yang diolah. Terakhir, hubungan korelasi antara tekanan beban kerja dan ketegangan kerja diukur.

Keputusan: Sebanyak 85 KK terlibat dalam kajian ini. Penemuan kami menunjukkan bahawa 58 (68.2%) KK mempunyai beban kerja yang tinggi. Daerah Tanah Merah, Tumpat, Pasir Mas dan Kota Bharu mempunyai bilangan KK paling banyak dengan tekanan kerja tinggi. Manakala 22% daripada pegawai perubatan mempunyai tekanan kerja. Dengan pengolahan teknik deskriptif melalui matriks korelasi, beban kerja mempunyai hubungan dengan tekanan kerja walaupun secara analisa korelasi menunjukkan tiada hubungan secara signifikan.

Kesimpulan: Kebanyakan KK di Kelantan mempunyai tekanan beban kerja tinggi dan 22% daripada pegawai perubatan yang bertugas di KK mempunyai ketegangan kerja. Kewujudan kedua-dua faktor secara bersamaan boleh mengganggu kualiti perkhidmatan kesihatan terutamanya di negeri Kelantan.

Kata kunci: *Workload Indicator of Staffing Needs* (WISN), klinik kesihatan (KK), tekanan beban kerja, ketegangan kerja, *Job Content Questionnaire* (JCQ), Kelantan

ABSTRACT

WORKLOAD PRESSURE AND JOB STRAIN AMONG MEDICAL OFFICERS IN HEALTH CLINICS, KELANTAN

Background: Proper distribution of human resources and job strain control are among the important factors to ensure high quality performance and sustain quality of the services. The aim of this study is to determine the workload pressure and job strain among medical officers in health clinics (HCs), Kelantan, and the correlation between these two factors.

Methods: This study was a combination of record review survey using human resources data of year 2018 involving HCs in Kelantan and cross-sectional survey on job strain among medical officers in HCs. The study was conducted between January and April 2019 and implemented using clustered random sampling as all HCs in seven districts in Kelantan were chosen (Kota Bharu, Tumpat, Pasir Mas, Tanah Merah, Bachok, Pasir Puteh, and Machang). Firstly, the workload pressure was determined by using Workload Indicator of Staffing Needs (WISN), developed by World Health Organisation (WHO). It was considered high workload pressure when ratio between required and acquired medical officers less than one. Meanwhile, medical officers from those HCs were given the Malay version of validated Job Content Questionnaire (JCQ) in order to investigate job strain. There were three components investigated and two of them; decision latitude and psychological demand were applied to define job strain. The data was presented descriptively using mean and standard deviation as well as frequency and percentage upon the type of variables. Next, workload pressure and JCQ scales were correlated to find the association.

Results: A total of 85 HCs were involved in the study. Our findings indicated that 58 (68.2%) of HCs in Kelantan acquired high workload pressure. Tanah Merah, Tumpat, Pasir Mas and Kota Bharu had the most HCs with high workload pressure. The prevalence of high strain among medical officers in HCs was 22%. The correlation matrixes descriptively appreciated that workload pressure was associated with job strain. However, we found that there was no significant correlation between them.

Conclusion: Majority of HCs in Kelantan had high workload pressure and concurrently 22% their medical officers were having high job strain. Existence of both factors exert great harm to the quality of health deliveries especially in Kelantan.

Keywords: Workload Indicator of Staffing Needs (WISN), health clinics (HCs), workload pressure, job strain, Job Content Questionnaire (JCQ), Kelantan

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Bismillahirrahmanirrahim,

In the name of ALLAH, the Most Beneficent and the Most Merciful. Salutations upon His messenger Muhammad S.A.W (peace be upon him), his family and his companions. With enlightenments and perseverance given by ALLAH, I have duly completed this research in the nick of time.

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Last but not the least, I would like to thank my family; my parents, brothers and sisters for understanding and full moral support throughout writing this thesis and my life in general. This accomplishment would not have been possible without them. Thank you.

DECLARATION

I honourably declared that this research project was done with my own hands and had not been submitted in any form for the award of a higher degree elsewhere.

Ahmad Zulfahmi Bin Mohd Kamaruzaman

Student ID: P-UM 0101/18

LIST OF DRAFT PAPERS

This research project includes the following two draft papers:

1. Ahmad Zulfahmi Mohd Kamaruzaman, Mohd Ismail Ibrahim, Anees Abdul Hamid. *Workload pressure in health clinics using Workload Indicator of Staffing Needs (WISN) method in Kelantan* (Prepared for submission to Journal of Environmental Research and Public Health)
2. Ahmad Zulfahmi Mohd Kamaruzaman, Mohd Ismail Ibrahim, Anees Abdul Hamid. *Workload pressure and job strain among medical officers in health clinics, Kelantan.* (Prepared for submission to Oman Medical Journal)

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LIST OF ABBREVIATIONS

AWT	Available working time
CAF	Category allowance factors
CAS	Category allowance standards
HC	Health clinic
IAF	Individual allowance factors
JCQ	Job Content Questionnaire
MOH	Ministry of Health
PHC	Primary health care
UHC	Universal health coverage
WHO	World Health Organisation
WISN	Workload Indicator of Staffing Needs

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CHAPTER 1

INTRODUCTION

1.1 Background

Primary health care (PHC) is the backbone of health care systems throughout the globe. It serves the communities by delivering the first level of contact for medical attention. Apart of curative treatment, PHC also caters health promotion along with preventive and rehabilitative care (World Health Organisation, 2019). In Malaysia, PHC is a conjoint service between public and private institutions and the vast portion of it is contributed by Malaysia's Ministry of Health (MOH) (Ministry of Health, 2016b). As the mean to obtain optimal health services, it is a need to recognise universal health coverage (UHC). It implicates accessible health services, people using medical attention not indebted towards catastrophic health expenditure and last but not least, quality health deliveries (Puras, 2016). In order to implement quality health services, acquiring equitable and enough human resources accordingly proves crucial especially for medical officers.

Kelantan, as one of the states in northeastern part of Peninsular Malaysia, has been ladened with medical officers' issues. First and foremost, Kelantan has between 0.74 to 1.12 doctors per 1,000 population, compared to national's average at 1.80 doctors for 1,000 population (Ministry of Health, 2016b; Ministry of Health, 2018). The findings have made Kelantan as the lowest state in Peninsular Malaysia in term of doctor's ratio per population before Sabah and Sarawak as shown in **Figure 1.1**.

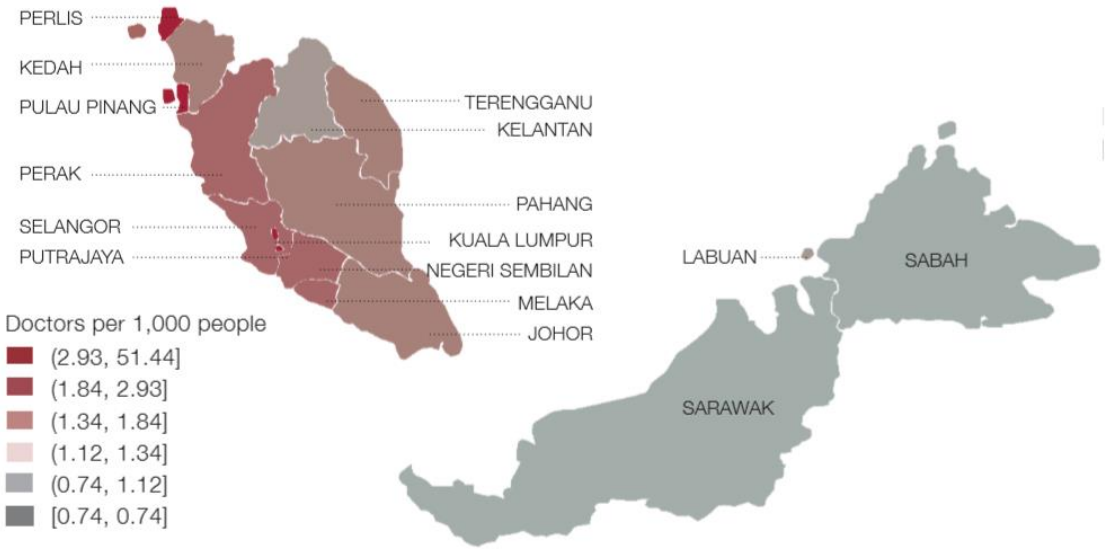

Figure 1.1: Doctors per 1,000 population, by State (Ministry of Health, 2016b)

Apart from the distribution of medical officers between states in Malaysia, internal distribution of medical officers in health clinics (HCs) within Kelantan is another issue to be highlighted. Lack of medical officers, worsened with inequitable distribution would increase the workload pressure in HCs and subsequently impair the service deliveries.

In view of the highlighted issues, more objective measurement of the workload pressure is needed to alleviate the inequitable distribution. Basically, there are several methods to calculate workload pressure (Daviaud and Chopra, 2008). Traditional methods to quantify the workload pressure use population ratios (number of doctors, nurses etc. per 100,000 population), historical tracking, fixed staff schedule and professional judgement (Schoo *et al.*, 2008). These methods are able to envisage the big picture, but they are not competent enough to differentiate local morbidities, facilities' workload and preferable health-seeking behaviours among

population. As consequences, this condition will eventually lead to disequilibrium; understaffing in certain facilities and overstaffing in other facilities.

As for problem-solving mechanism, the World Health Organisation (WHO) has introduced the Workload Indicator of Staffing Needs (WISN), a tool developed in 1998, with improvements in 2010. The WISN method is used to determine how many health workers are required to cope with actual workload in a given facility, estimate staffing requirement based on workload, time required to deliver health services and last but not least, assess workload pressure on staffs. WISN method is preferred as it is simple to operate and use, applicable to all personnel categories, technically acceptable to health service managers, and also comprehensible to non-medical managers (World Health Organization, 2010c). Round the globe, application of WISN method has been proved successful and beneficial especially in developing countries such as Indonesia, India, Turkey and African countries (Bonfim *et al.*, 2016; Govule *et al.*, 2015; Hagopian *et al.*, 2012; Kurnia Sari and Maria Rosa, 2016; Ministry of Health Indonesia and German Society for International Co-operation, 2009; Mollahaliloğlu' *et al.*, 2015; Nayebi *et al.*, 2017; Pandey and Chandel, 2013; Ravhengani and Mtshali, 2017; Shipp, 1998; Wiseman *et al.*, 2017; World Health Organization, 2010a).

Indeed, as a consequence of high workload pressure, job strain is prone to develop (Prins *et al.*, 2007). The meaning is similar, however the terms are shared for ‘occupational stress’ and ‘work-related stress’. Basically, the terms are used interchangeably in the literature by implicating to the strain attributed by job factors. Job strain is defined as the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and

which challenge their ability to cope (Leka *et al.*, 2004). Moreover, job strain can end up with undesirable individual outcomes such as depression, dull, tense, physically not compatible individuals. Individually, it is up to the extent towards musculoskeletal problems, hypertension, and also cardiovascular diseases (Schnall Pl Fau - Landsbergis *et al.*, 1994). Besides individual effects, organisations may be struck with increasing rate of absenteeism, decreased productivity and set morale-damaging conditions (Leka *et al.*, 2004) . As a consequence, it resulted in $200 billion loss per year, as recorded by International Labour Organisation (ILO). Kessler *et al.* (1999) has reported that these costs include salaries for the absent days, cost for hospital admissions and outpatient care, and cost related to decreased productivity.

Healthcare workers are affected by job strain. Either the profession is professional such as doctors, pharmacist and science officers or the supportive staffs such as nurses and assistant medical officers, each profession pose own risk for job strain. Among doctors, it can be divided to house officers (two-year-period before full doctor registration in Malaysia), medical officers and also specialists. House officers usually take the focus of having job strain. A total 31%, 42.9% and 72% of house officers in Kelantan, Kota Kinabalu, Sabah and Kuala Lumpur respectively have been reported to suffer job strain (Aizat Shahruddin *et al.*, 2016; Sidi and Thambu, 1997; Yusoff *et al.*, 2011). A research done in University Malaya Medical Centre (UMMC) has shown the prevalence of stress is 34% among doctors meanwhile in Kuala Lumpur Hospital, the figure is 40% (Ruhaini and Nor Hassim, 2009; Zainal and Dasen, 1999). However, research regarding job strain among medical officers particularly in PHC setting is still lacking in number. A research in district of Kemaman, Terengganu, has shown 57.1% of health care workers and 36.4% of community nurses in Kelantan workers were affected by job strain (Abd

Rahman and Noor Hassim, 2006; Majdah and Noor Hassim, 2000). A study by Razali (2010) in Kelantan has found 9.7% (3 out of 31) of medical officers in HCs in Kelantan reported to suffer job strain. Unfortunately, the number of medical officers involved only 11.6% (34 out of 292 respondents). The rest of the sample were drawn from assistant medical officers and nurses.

In order to measure job strain, Job Content Questionnaire (JCQ); a set of questionnaires created to quantify the 'content' of a respondent's work task, has been applied. The questionnaires target on psychological and social structure of working condition. It is among the distinguished instruments used for psychosocial job analysis worldwide. The JCQ is made up four sections. The first section has 71 questions, assessing skill discretion, decision authority, psychological workload, physical exertion, job insecurity, toxic exposures, hazardous conditions, supervisor support and co-worker support. Second section has 26 questions which assess job dissatisfaction, physical/psychosomatic strain, sleeping problems and depression. Meanwhile, third section is made up 18 questions assessing the use of technology in workplace and last but not least, fourth section has 5 questions assessing wage-hours. The scoring for each questions are using Likert Scale of 1 to 4 (strongly disagree, disagree, agree and strongly agree) (Karasek *et al.*, 1998; Karasek *et al.*, 1988). However, we conducted this study by using more appropriate, the locally-set Malay validated JCQ comprised of skill discretion, decision authority, psychological workload, supervisor support, and co-worker support components (Amin *et al.*, 2008).

Therefore, it is a clear agreement that workload pressure in the HCs and simultaneous job strain among medical officers are the most undesirable duo to exist in delivering quality health services towards public. Due to the its clear justification, this study was done to see the significant association between these two factors.

1.2 Literature Review

1.2.1 Primary health care in Malaysia

During pre-independent era of British settlement in Malaysia, hospitals were built mostly in major cities. Rural areas were lack of similar facilities. In 1840s, British government brought in Chinese from mainland of China to work in tin mines and Indians to serve in rubber estates. This surge of workers had established need for health care services in these two places and set up the basis for PHC. In 1955, Rural Health Services was developed, introducing the three-tier system. This service was initially started under Medical Services Department under British colony, and later been continued by Malaysian Ministry of Health (MOH), after Malaysia gaining independence in 1957. The three-tier system involved a main health centre (consist of a medical officer, dentist, nurses, midwives, medical assistants and public health team), a health sub-centre (consist of medical assistants, nurses and midwives) and midwifery clinic.

In 1973, the three-tier system was replaced by two-tier system. The health sub-centres were transformed into main health centres (currently known as health clinics). As for midwifery clinics, '*klinik desa'* (community clinics) had become the replacements, run by a trained and qualified nurse or community nurse.

Times evolved. Nowadays, most of health clinics (HCs) are run by qualified medical officers. These medical officers are responsible to attend patients, accept referrals from assistant medical officers, nurses and also community nurses as well as sending referrals for further treatment at tertiary care. Apart of routine clinical aspect for the patients, medical officers do play important role for prevention and control of diseases especially in primary prevention of communicable and non-communicable diseases.

1.2.2 Primary health care in Kelantan

Kelantan is situated in northeastern region of Peninsular Malaysia. It is the sixth largest state of Malaysia and covers almost 5% of Malaysia (15,101 km2) with total population of 1.83 million and average annual population growth rate 2.0%, as shown by **Figure 1.2** (Department of Statistics Malaysia, 2018).

The population in Kelantan majority area Malays who comprise 96.21% of the total population, followed by Chinese, Indians and others (3.19%, 0.27% and 0.63%, respectively). Kelantan has a total of 85 HCs distributed across ten districts; Kota Bharu (17), Kuala Krai (7), Jeli (5), Machang (7), Pasir Mas (9), Pasir Puteh (7), Tanah Merah (5), Tumpat (9), Bachok (8) and Gua Musang (10) (Kelantan State Health Department, 2017).

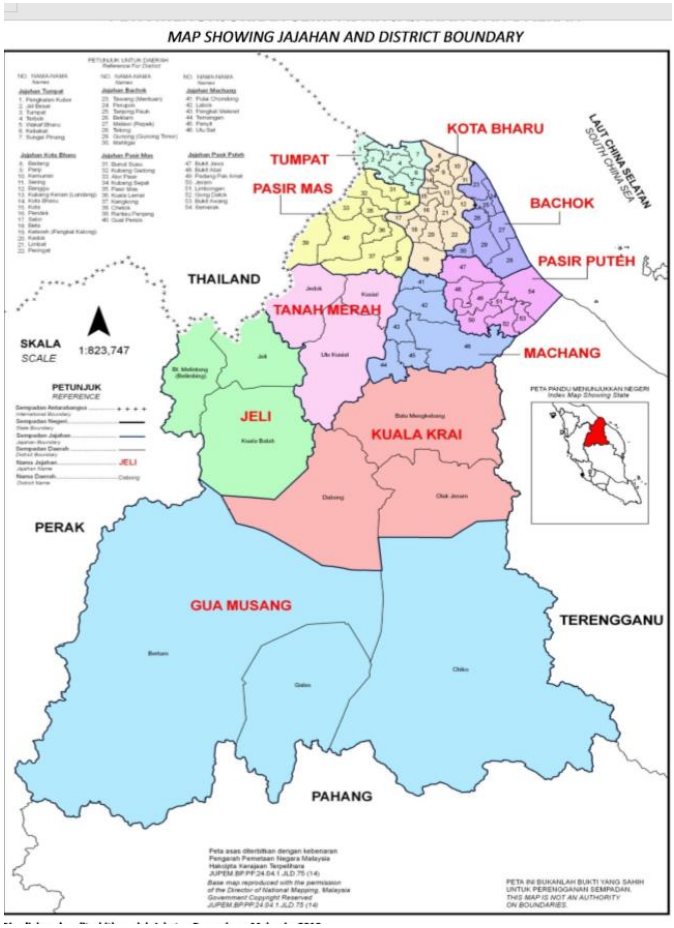

Figure 1.2: Map of Kelantan

1.2.3 Human resource management

Universal health coverage (UHC) ensures every citizen is guaranteed universally accessible and quality health care with no constraint for financial hardship as proclaimed by 'Health For All' of 1978 Alma Alta Declaration (Puras, 2016).

The Fifth National Health and Morbidity Survey in 2015 reported that 82.8% of the population in Malaysia stays within 10 kilometres of a health facility. Better accessibility towards HCs exist in Kelantan as 93% of the population stays within the same distance (Ministry of Health, 2015; Thomas *et al.*, 2011)

Besides accessibility to facilities, human resources in health care play major role in determining the quality of health care itself. Human resource management is synonym with the mantra of The Eight Rights. The right number of people, in the right place, at the right time, with the right skills, right attitude and doing the right works at the right cost. As an outcome, it will deliver the right work output (World Health Organization, 2010b; World Health Organization, 2010c). Nevertheless, the condition is still far from perfect.

It can be seen worldwide that there are human resources maldistribution. In the perspective of Western Pacific Region assessment, Malaysia has been ladened with few types of maldistribution. Firstly, gender distribution. Male dominates the health workforce; however, the percentage of female is increasing from 42.4% in 2008 to 45.7% in 2011. Secondly, the age distribution. The distribution is skewed to the right as median age is within 30-39 years old. Thirdly, geographical distribution. In Malaysia, human workforce in health sector is more abundance in West Coast states of Peninsular Malaysia (Negeri Sembilan, Melaka, Selangor, Perak, Penang, Perlis, and the federal territories of Kuala Lumpur and Putrajaya) which are the more developed region in the country. The East Coast states of Kelantan, Terengganu and Pahang and the states of Sabah and Sarawak which are considered the less developed regions, lack the human workforce. Fourth, sectoral distribution. Public sectors have outnumbered private sector, but the number in private sector is increasing (World Health Organization Western Pacific Region, 2014).

The factors on why these maldistributions occur can be hypothesized from the socio-economic aspects. Surely, there is better living standards in urban area compared to rural areas. Higher population in urban setting means there will be more patients and certainly better incomes. Besides, centralisation or decentralisation processes will affect the distribution of human health workforce (Wibulpolprasert and Pengpaibon, 2003).

One of the major categories in human health workforce is the medical officers. Besides the shortage issue of medical officers, maldistribution is also a problem. Medical officers are not distributed equally according to the burden. Hence, maldistribution will create higher workload pressure to an organisation in which later will influence the motivation and productivity as well as clients' satisfactions toward the services.

1.2.4 Workload Indicator of Staffing Needs (WISN)

Objectively measuring the workload pressure is challenging as it deals with many dynamic, changeable factors. Classic ways to quantify the workload pressure are by using population ratio and fixed staff schedule. Both ways ignore the local differences in the amount and type of work that health workers do. Hence, the measurement of workload can be inaccurate and misleading. Foreseeing the subjective implications of these classic ways, World Health Organisation (WHO) has introduced WISN, a tool developed in 1998, with improvements in 2010.

The WISN method is used to determine how many health workers are required to cope with actual workload in a given facility, estimate staffing requirement to deliver expected services of a facility based on workload, calculate workload and time required to accomplish task of individual staff categories and comparing between

health facilities and administrative areas and last but not least, assess workload pressure on staffs (World Health Organization, 2010c).

The WISN method come with an array of advantages as it is simple to operate and use, applicable to all personnel categories and technically acceptable to health service managers and comprehensible to non-medical managers. (World Health Organization, 2010c).

Round the globe, WISN has been used in many countries, crossing all continents. In Kenya and Vietnam, WISN is used to measure the workload and efficiency for Human-immunodeficiency Virus (HIV) treatment programs (Burmen *et al.*, 2017; United States Agency of International Development, 2014). India, Pakistan, Turkey and Brazil have used WISN to measure the burden of family health services in respective countries (Afzal *et al.*, 2016; Bonfim *et al.*, 2016; Hagopian *et al.*, 2012; Mollahaliloğlu' *et al.*, 2015). Allocation for proper amount of staffs by measurement using WISN method has been used in Uganda, South Africa and Iran (Daviaud and Chopra, 2008; Govule *et al.*, 2015; Nayebi *et al.*, 2017). As for Yemen and Namibia, both use WISN to evaluate human resources policy and have detailed overview regarding PHC system (Al-Hebshi, 2013; McQuide *et al.*, 2013). Indonesia has gone for a step ahead by creating and adapting own WISN manual for the whole country. The manual is used to measure burden and allocation of human resources in '*puskesmas*' (health clinics in Indonesia) and also in '*rumah sakit'* (hospitals in Indonesia)

1.2.5 Definition of stress

Stress has different meaning as found in various literature. The meaning varies according to the researchers' background; either they are psychologist, medical

doctors or social scientists. The word “stress” itself may perceive differently for each individual or researchers. In 1976, Hans Selye, the father of stress research has defined stress as non-specific response of body to any demand made upon it (Tan and Yip, 2018).

In the era of demanding world of globalisation, stress and the nature of effects on health has drawn major interests. Stress poses psychological and physical effects that result from pressures in daily life. Stress is a two-sides of a coin. It can be positive if stress can drive and motivate a person towards specific targets and challenges. Positive stress can deliver good, quality achievements in life. Vice-versa, if stress is excessive or poorly managed, stress can overrule the coping mechanism and capacity to respond, leading the individuals towards the bad complications of stress. Therefore, this is called negative stress (Karasek *et al.*, 1988).

1.2.6 Job strain

High workload pressure can induce job strain. (Prins *et al.*, 2007; Raija Kalimo *et al.*, 1987; World Health Organization, 2010b).The meaning refers to the same, however the terms are shared for ‘occupational stress’, ‘job stress’ and ‘work-related stress’. Job strain is defined as the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope (Leka *et al.*, 2004).

Job strain results in depressed, dull, tense, physical-sickness ridden workers. Individually, it is up to the extent towards musculoskeletal problems, hypertension, and also cardiovascular diseases (Schnall Pl Fau - Landsbergis *et al.*, 1994). Besides personal well-being, job strain also affects the rate of absence, decreased productivity, and set morale-damaging that will have bad implications on the

organisations (Leka *et al.*, 2004). This is the reason why employees' welfare is a detrimental aspect to be taken care off by employers. As a consequence, it was up to $200 billion in total loss per year, as recorded by the International Labour Organisation (ILO). These costs include salaries for the absent days, cost for hospital admissions and outpatient care, and cost related to decreased productivity (Kessler *et al.*, 1999).

In HCs, the causes of job strain are impregnated from different sources. Lack of resources, low social support from colleagues and supervisor, and the internal factors of medical officers are just few to mention (Loh Foon Fong, 2019). Thus, investigating the sources, prevention and control of job strain are compulsory and this needs multidisciplinary approach to solve the problems (spectrum of psychological, sociological and physiological problems (Raija Kalimo *et al.*, 1987)

1.2.7 Prevalence of job strain

Working in health sector is prone to have job strain. Either the profession is professional such as doctors, pharmacist and science officers or the supportive staffs such as nurses, assistant medical officers etc., each profession get own risk for job strain. Among the doctors, it can be classified to house officers (2-year-period before full doctor registration in Malaysia), medical officers and specialists. Nevertheless, house officers usually take the focus of having job strain. A total of respective 31%, 42.9% and 72% of house officers in Kelantan, Kota Kinabalu, Sabah and Kuala Lumpur have been reported to have job strain (Aizat Shahruddin *et al.*, 2016; Sidi and Thambu, 1997; Yusoff *et al.*, 2011). A research based in University Malaya Medical Centre has shown the prevalence of stress is 34% among doctors meanwhile in Kuala Lumpur, the figure is 40% (Ruhaini and Nor Hassim, 2009;

Zainal and Dasen, 1999). However, research regarding job strain among medical officers particularly in PHC setting is not common. A research in district of Kemaman, Terengganu, has shown 57.1% of health care workers and 36.4% of community nurses in Kelantan workers affected by job strain (Abd Rahman and Noor Hassim, 2006; Majdah and Noor Hassim, 2000). The nearest study is 9.7% (3 out of 31) of medical officers in HCs in Kelantan reported to have job strain (Razali, 2010). However, the number of medical officers involved only 11.6% (34 out of 292 respondents). The rest of the sample was represented by assistant medical officers and nurses.

1.2.8 Job Content Questionnaire (JCQ)

Job Content Questionnaire (JCQ) is a set of questionnaires created to quantify the 'content' of a respondent's work task. The questionnaires target on psychological and social structure of working condition. It is among the distinguished and well-known instruments used for psychosocial job analysis worldwide. The JCQ is made up four sections. The first section has 71 questions, assessing skill discretion, decision authority, psychological workload, physical exertion, job insecurity, toxic exposures, hazardous conditions, supervisor support and co-worker support. Second section has 26 questions which assess job dissatisfaction, physical/psychosomatic strain, sleeping problems and depression. Meanwhile, third section is made up 18 questions assessing the use of technology in workplace and last but not least, fourth section has five questions assessing wage-hours. The scoring for each question is using Likert Scale of 1 to 4 (strongly disagree, disagree, agree and strongly agree).

In local setting, the Malay validated JCQ has been introduced by Aziah *et al.* (2004) and Amin *et al.* (2008) with some modifications. Amin *et al.* (2008) for

instance, has incorporated 22 questions (skill discretion, decision authority, psychological workload, supervisor support and co-worker support) into the Malay validated version of JCQ.

1.2.9 Karasek's job strain model

In 1979, Robert Karasek has created Karasek's Job Strain Model. In their analysis, Karasek and Theorell examine relationship between health and three aspects of worker's job; psychological demand, decision latitude and social support (Karasek *et al.*, 1998; Karasek *et al.*, 1988).

This model of job strain has been illustrated into an easier graphical representation of a model indicating the theory as an interaction between psychological demands and decision latitude, as shown in **Figure 1.3** (Karasek *et al.*, 1998; Karasek *et al.*, 1988).

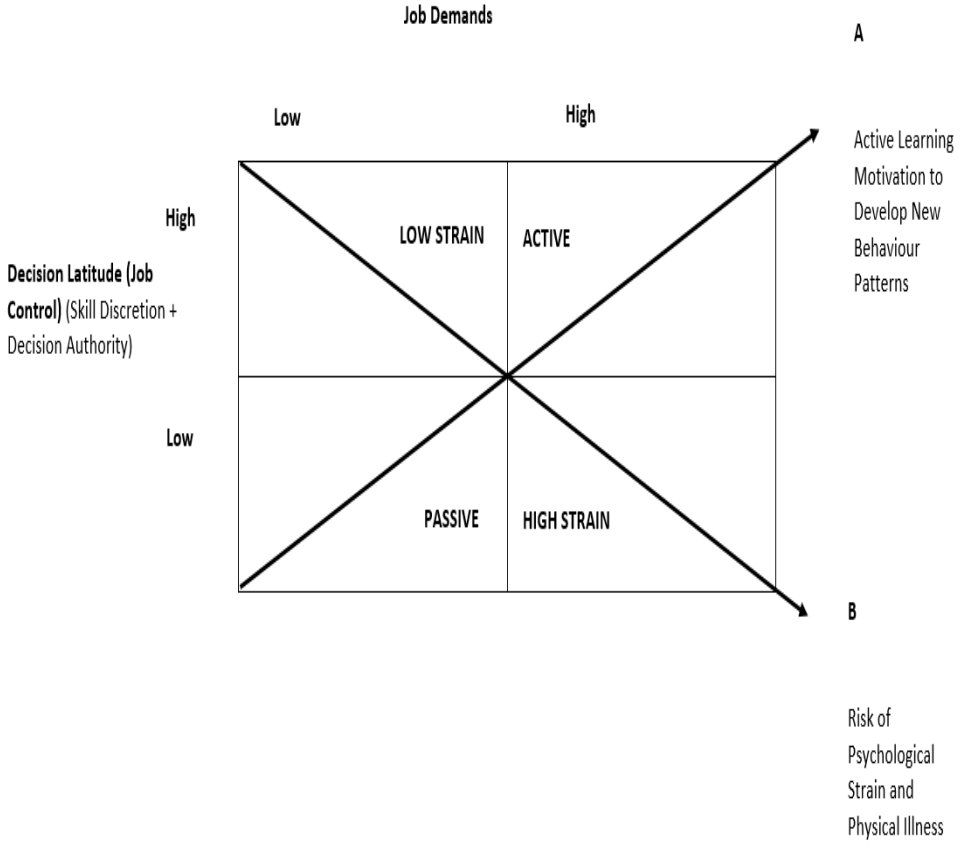

Figure 1.3: Karasek's Job Strain Model

There are four quadrants representing decision latitude and psychological demands. which describe four types of works; high strain jobs, low strain jobs, active and passive (Karasek *et al.*, 1998).

The primary concern is regarding the connection between high demand work and high/low control. High strain (right lower quadrant) is likely to occur when psychological demands are high and the workers' decision latitude is low. Later these circumstances will stir increased health and stress-related problems (Karasek *et al.*, 1988). The scenario is worsened if there is lack of social support for the affected

workers. Opposite of high strain is the low strain (left upper quadrant) that comprise of high decision latitude and low psychological demand. Although the nature of work is demanding, the workers are capable of their own decision-making processes. Effective and efficient problem-solving skills has given lesser burden towards psychological demand and a well coping mechanism system outweigh the burden of the work (Karasek *et al.,* 1998; Karasek *et al.,* 1988).

Besides job strain, there is another set of hypotheses formulated by Karasek. Another horizon of these four quadrants is what being called active (right upper quadrant); active behaviour of coping mechanism that develops under high psychological demand and high decision latitude. High motivation, self-driven learning experiences and good coping mechanism well flourished under this condition. The vice-versa condition is passive (left lower quadrant) condition. It is a combination of low psychological demand and low decision latitude which diminished the motivation and previously acquired skills, and lack of learning opportunities (Karasek *et al.,* 1998; Karasek *et al.,* 1988).

1.2.10 Conceptual framework

This study can be divided into two pathways as shown in **Figure 1.4**. Firstly, workload pressure, measured according to WISN method, was studied for all HCs in Kelantan. This measurement involves seven basic steps; estimate available working time (AWT), define workload components, setting activity standards, establishing standard workload, calculating allowance factors and determining staff requirements. The second part was assessing job strain among medical officers in HCs in Kelantan. The Malay validated JCQ by Amin *et al.* (2008) is utilised by assessing three scales; decision latitude, psychological demand and social support. Physical demand and job

security marked with *, were not included in this study.

Lastly, the correlation of workload pressure score and job strain score is measured.

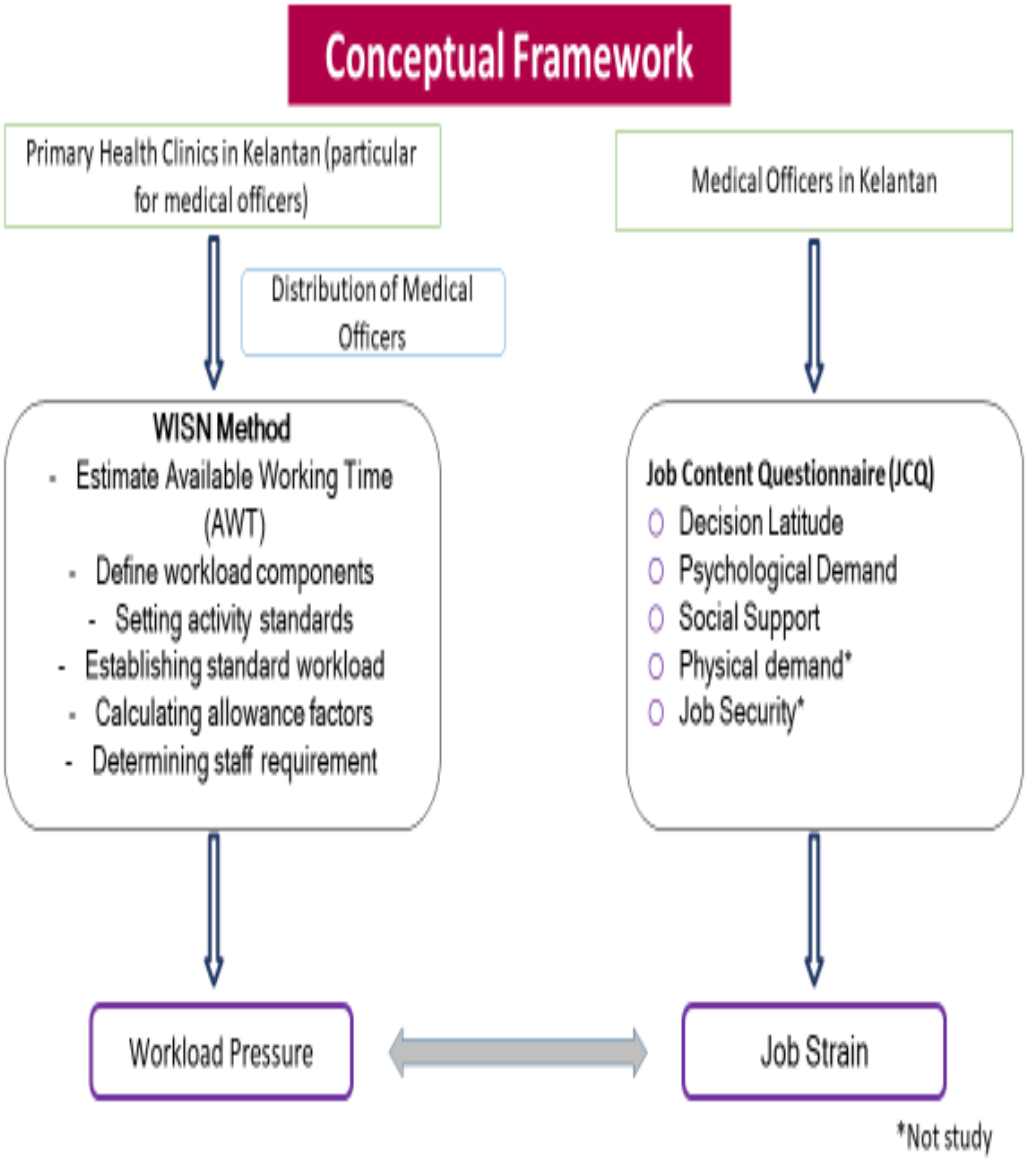

Figure 1.4: Conceptual Framework of Study

1.3 Statement of problem

1.3.1 Rationale

By doing this study, it helps to see which HCs that have low or high workload pressure in term of distribution of medical officers. The results finally can be used to suggest a better distribution of health workforce among medical officers in HCs in Kelantan. Thus, Kelantan State Health Department can have better manpower planning.

The Malay validated JCQ measures the job strain among medical officers in HCs. Medical officers who have job strain can be identified. The underlying problems, job strain burden and counter measures should be later investigated and applied.

Next, the correlation between workload pressure score and job strain score need to be studied to find the association between the workload pressure in HCs with job strain of medical officers.

1.4 Research questions

1. What is the workload pressure of HCs in Kelantan?

2. What is the job strain score among medical officers in HCs in Kelantan?

3. What is the correlation between workload pressure score and job strain score among medical officers in HCs in Kelantan?

4. What are the matrix correlations model between workload pressure ratio and job strain score among medical officers at HCs in selected districts in Kelantan?

1.5 Objectives

1.5.1 General objective

To study the workload pressure score of medical officers in HCs in Kelantan and its correlation with job strain score

1.5.2 Specific objectives

1. To describe the workload pressure of in HCs in Kelantan

2. To determine the level of job strain score among medical officers in HCs in Kelantan

3. To determine the correlation between workload pressure score and job strain score among medical officers in HCs in Kelantan

4. To develop a correlation matrix model between workload pressure ratio and job strain score among medical officers at HCs in selected districts in Kelantan

1.6 Research hypotheses

Workload pressure score will correlate with job strain score (decision latitude and psychological demand) and social support. High workload pressure in HCs leads to job strain score among medical officers.

1.7 Study outcomes

There are four main study endpoints in this study. The first one is to measure the workload pressure of HCs in Kelantan in 2018. The data were presented in numerical form according to the ratio of actual and required number of medical officers of WISN calculation.

The second intended outcome is to measure job strain score among medical officers in HCs in Kelantan by using the Malay validated JCQ. Job strain aspects include psychological, decision latitude and social support. The third one is to measure strength and direction of association of workload pressure score and job strain score.

The fourth outcome is by developing correlation matrixes model between workload pressure score and job strain score among medical officers at HCs. This matrix divides into four quadrants; A (high workload pressure and low job strain score), B (high workload pressure and high job strain score), C (low workload pressure and low job strain score) and D (low workload pressure and high job strain score).

1.8 Operational definition

Workload pressure is defined as ratio of actual number of medical officers over calculated required number of medical officers (World Health Organization, 2010c).

Job strain is measured by three scales from JCQ; decision latitude, and psychological demand. The scoring will take median as cut-off point to differentiate high and low job strain (Aziah *et al.*, 2004).

Medical officers are defined as medical officers that work in HCs in Kelantan state.

CHAPTER 2

METHODOLOGY

2.1 Study area

This study involved all HCs in Kelantan and selected medical officers in HCs.

2.2 Study design

This study applied a cross-sectional study design based two aspects; primary data for JCQ and secondary data of WISN measurement.

2.3 Study period

This study was conducted within four-months period starting from January till April 2019.

2.4 Reference population

All HCs and medical officers in Kelantan.

2.5 Source population

This study was conducted into two parts; A and B.

a) Part A: HCs in selected districts.
b) Part B: All medical officers in the HCs of selected districts.

2.6 Inclusion criteria

For the part A, all HCs of selected districts with medical officer were included. The workload pressure of each HC was subsequently calculated using WISN method. Meanwhile for the part B, medical officers who worked in HCs at least from 1st January 2018 till 31st December 2018 were selected into this study.

2.7 Exclusion criteria

As for exclusion criteria, community clinics (previously known as 1Malaysia Clinics were omitted for the part A. For part B, medical officers who were not available during the study period due to outside tasks/maternity leave/sick leave, were left from this study.

2.8 Sample size calculation

Firstly, for sample of medical officers, sample size calculation used single mean formula with 95% confidence interval. The standard deviation used was 2.3, based on job strain study in Taiwan (Tsai and Liu, 2012). After adding 10 % probability of drop rate, the calculated sample was 105. Secondly, for correlation study between