

## PREVALENCE OF NON-COMMUNICABLE DISEASE (NCD) RISK FACTORS AMONG EMPLOYEES IN THE KOSPEN PLUS PROGRAMME IN MALAYSIA

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### ABSTRACT

**Introduction:** Non-communicable diseases (NCDs) is the leading cause of global mortality. The KOSPEN Plus programme is a workplace intervention programme initiated by the Ministry of Health (MOH) Malaysia to reduce the burden of NCDs among employees in Malaysia. This study aims to determine the prevalence of NCD risk factors among employees in the KOSPEN Plus programme.

**Method:** This is a retrospective descriptive study of cumulative reporting of NCD risk factors among employees from workplaces that implemented the KOSPEN Plus programme. Secondary data over 5 years (2016 till 2020) obtained from the National KOSPEN Plus Programme database were included in this study.

**Results:** The percentage of employees that underwent health screening showed a rising trend since 2016 from 53.5% to 88.2%. The prevalence of raised random blood glucose levels and raised blood pressure showed a 9.8% increment over 5 years. The prevalence of overweight individuals ranged from 53.4% to 57.4%. Meanwhile, the prevalence of employees with raised blood pressure was found to be between 12.0% to 17.1%. As for mental health, the highest prevalence was observed in the mild category for all three subscales, depression (5.48% to 7.03%), anxiety (7.68% to 9.59%), and stress (5.81% to 7.94 %).

**Conclusion:** There is an urgent need to prevent and reduce modifiable NCD risk factors among employees in Malaysia. The workplace is an effective setting for health promotion programmes. The KOSPEN Plus programme is recommended to be implemented in all workplaces.

**Keywords:** *KOSPEN Plus; non-communicable diseases; occupational health; workplace; health promotion*

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### 1. Introduction

Globally, the incidence of non-communicable diseases (NCDs) is rapidly rising and is the leading cause of death, killing more people each year than all causes combined. The burden of NCDs

not only affects high-income countries, in fact around 80 % of premature NCD deaths occur in low and middle-income countries (1). The 2014 NCD Global Status report indicated that 65% of deaths globally were attributed to NCDs, comprising mainly of cardiovascular diseases, cancers, diabetes, and chronic lung diseases (2).

In Malaysia, the prevalence of diabetes mellitus showed a sharp rise from 11.2% (2011) to 18.3% (2019) in the past decade, according to the National Health and Morbidity Survey (NHMS) (3)(4). Obesity has become a major public health concern in developing nations, with 50% of adults in Malaysia being found to be overweight or obese (4)(5). Meanwhile, the prevalence of hypertension was reported to be around 30% in 2019 (4).

NCDs such as diabetes mellitus, hypertension, and dyslipidaemia are major risk factors for cardiovascular diseases and account for the largest fraction of deaths related to NCDs (6). The majority of the risk factors of NCDs are strongly related to unhealthy diet, physical inactivity, and use of tobacco and alcohol (7). For reducing the impact of NCDs, early detection and timely intervention is key to preventing further morbidity and mortality related to NCDs (8). Besides that, mental health has become a priority in recent times considering the increasing burden of mental health issues across the world. In 2019, Malaysia reported approximately 23% of the adult population suffering from depression (4).

Given the rising prevalence of NCDs in Malaysia, the Ministry of Health (MOH) Malaysia had introduced the “Komuniti Sihat, Pembina Negara” (KOSPEN) Plus programme in 2016. KOSPEN Plus is a workplace NCD risk factor intervention programme that empowers employers and employees to improve their health leading towards a healthy working population.

This programme consists of eight scopes mainly 1) health screening, 2) healthy eating, 3) non-smoking practice, 4) active living, 5) weight management, 6) healthy mind, 7) healthy workplace and 8) prevention and reducing harmful use of alcohol. This programme is implemented in both government and private agencies. The employer is responsible for providing the needed resources for this programme as well as forming two teams at the workplace mainly the liaison team and functional team. The liaison team is responsible for the coordination of the programme and the functional team serves as functional units in implementing KOSPEN Plus activities at the workplace. Meanwhile, the role of MOH is to provide technical input and advice including training, supervision, and monitoring (9).

Workplaces are suitable settings for implementing interventions centred around preventing NCDs by health screening and promoting healthy lifestyles. This is mainly because employees spend an average of 8 to 12 hours per day at work, hence the workplace environment is critical in cultivating healthy behaviours among employees (10). Workplace wellness programmes have become increasingly popular among employers in the public and private sector has given the benefits of such programmes.

Promoting employee health by creating healthy workplace culture and environment is not only beneficial for employees but also beneficial to employers. An effective workplace wellness programme will prevent NCDs and help improve the general well-being of employees. This in turn will reduce medical costs and absenteeism while improving the productivity of employees and drive organizations and nation's economic growth (11). Thus, employers can reap many benefits by supporting the implementation of workplace wellness programmes. The purpose of this study was to determine the prevalence of NCDs risk factors among employees in workplaces that implemented the KOSPEN Plus programme.

## **2. Materials and Method**

### **2.1 Study design**

This is a retrospective descriptive study of cumulative reporting of NCD risk factors among employees from KOSPEN Plus agencies. Secondary data was obtained from the National KOSPEN Plus Programme database from the year 2016 till 2020. This data was periodically collected by the Occupational and Environmental Health Unit at each District Health Office and State Health Department.

The data is subsequently sent to the Occupational and Environmental Health Sector, Ministry of Health (MOH) Malaysia Headquarters for monitoring and evaluation purposes. The inclusion criteria for this study are all employees from the public and private sector that implemented the KOSPEN Plus programme from the year 2016 till 2020. Employees from the MOH or employees already diagnosed with any non-communicable diseases are excluded from this study.

## 2.2 Measures of KOSPEN Plus Programme Scopes

In this study, four main measures of NCD risk factors were reported among employees which include raised random capillary blood glucose, raised blood pressure, body mass index (BMI)  $\geq 25$  kg/m<sup>2</sup>, and the mental health status of employees. Screening was conducted by employers of the KOSPEN Plus agencies. Raised blood glucose levels are defined as capillary random blood glucose level of  $\geq 5.6$  mmol/L based on the Malaysian Clinical Practice Guideline on Management of Type 2 Diabetes Mellitus (5<sup>th</sup> Edition). Raised blood pressure is defined by the Malaysian Clinical Practice Guideline on Management of Hypertension (5<sup>th</sup> Edition) as any recorded blood pressure levels of 140/90 mmHg and above ( $\geq 140/90$  mmHg). Abnormal BMI was described as a measured BMI of greater than or equal to 25 kg/m<sup>2</sup> which includes the overweight and obese category as per World Health Organization (WHO) recommendations.

Meanwhile, the mental health status of employees was assessed using the self-administered Depression Anxiety and Stress Scale (DASS)-21 questionnaire. The DASS-21 is based on three subscales of depression, stress, and anxiety and each subscale consist of seven questions each. The employee's DASS-21 scores were then grouped into 3 categories mainly mild, moderate, and severe/ extreme severe based on the severity (Table 1). The third category consists of scores of both severe and extremely severe levels as the recommended intervention for both these levels is the same as outlined in the KOSPEN Plus programme.

## 2.3 Data Analysis

The cumulative health screening data from all states and federal territories in Malaysia was compiled and cleaned in Microsoft Excel. A descriptive analysis was performed using Microsoft Office Excel 2019 (version 2104) and findings were expressed in counts and percentages for categorical data.

## 3. Results

Table 2 shows the total number of employees from the public and private agencies that participated in the KOSPEN Plus program in the past five years.

The percentage of employees that were eligible or fulfilled the inclusion and exclusion criteria for health screening ranged between 79.8% to 92.8% and those who underwent health screening increased from 53.5% in 2016 to 88.2% in 2020. Participation of public agencies showed an increasing trend while the uptake among private agencies was lesser.

Figure 1 shows the prevalence of employees in the public and private agencies with raised random capillary blood glucose, raised blood pressure, and BMI  $\geq 25$  kg/m<sup>2</sup>. The prevalence of raised random capillary blood glucose shows an increment from 21.8% in 2016 to 30.9% in 2020. A similar trend was observed for those with raised blood pressure which shows a steady increase from 12.0% in 2016 to 17.1% in 2020. Meanwhile, the proportion of employees overweight or obese (BMI  $\geq 25$  kg/m<sup>2</sup>) from the year 2018 to 2020 ranged between 53.4% to 57.4%. Employees' BMI data for the years 2016 and 2017 were not available.

Figure 2 shows the mental health status of employees for depression, anxiety and stress categorized into mild, moderate and severe/extremely severe. Overall, the prevalence of moderate to severe/extremely severe category for depression, anxiety and stress remained low. Over the period of four years, the moderate to severe/extremely severe category shows a reducing trend in all three subscales for depression (from 3.06% in 2017 to 2.37% in 2020), anxiety (from 8.66% in 2017 to 6.06% in 2020) and stress (from 4.67% in 2017 to 2.81% in 2020).

## 4. Discussion

Most workplaces that implemented the KOSPEN Plus programme was from the public sector as compared to the private sector. However, there is a need to raise awareness of employers and employees towards the importance and benefits of workplace health promotion programs

such as increasing employees productivity, reducing employees compensation, reducing medical absenteeism at work, and improving organizational relationship between employers and employees (12-14). Besides that, the uptake of workplace wellness programmes in the private sector could be improved by aligning incentives or rewards for them to invest in such programmes (15).

The rising trend of raised blood capillary blood glucose from this study is similar to the rising prevalence of newly diagnosed diabetes mellitus (DM) which saw a two-fold increase (4% to 8.9%) in the past 10 years. The prevalence of hypertension also showed an increasing trend and was similar to findings from Malaysia's NHMS in 2019, which reported a 33% prevalence (16).

The factors mainly attributed to this high prevalence are overweight, diabetes mellitus, and high sodium intake (17-19). Around 50% of employees were found to be overweight and this finding was similar to findings from studies involving the Malaysian population (19-21). Targeted interventions promoting a healthy diet and physical activity are highly needed to address this issue of a worryingly high prevalence of overweight and obesity in Malaysia (22, 23). The relatively significant proportion of employees with mild to severe/ extremely severe scores for depression, anxiety, and stress show the need for workplaces to adopt good mental health policies and manage psychosocial risks accordingly (24).

Health screening is a vital component of workplace wellness programs as it helps in identifying health issues among employees and employers and indicates areas where the action is needed based on priority (25). This in turn allows us to design more targeted or focused interventions addressing these issues to yield better health outcomes. Since its implementation in 2016, a total of 49, 042 employees from the public and private sectors in Malaysia have been screened for NCD risk factors under the KOSPEN Plus programme.

This only accounts for less than 0.3% of the total employed labour force in Malaysia which is estimated at around 15 million in 2020 (26). A similar situation is observed globally and this could be attributed to organisations lack of understanding of the advantages of healthy workplaces or unequipped with adequate knowledge, skills, or tools to implement workplace NCD prevention pro-

grammes (27). This will ensure an effective impactful intervention addressing actual NCD issues among employees with resources. In addition to the growing epidemic of NCDs observed in the Association of South East Asian Nations (ASEAN) region, occupational health has a vital role to play in NCD risk management and advocating healthy lifestyles as part of a healthy workplace programme in an occupational setting (28, 29).

Risk assessment has been a vital component of the hazard identification, risk assessment, and risk control (HIRARC) process at the workplace, in which the workplace hazards are identified and control measures are implemented based on the hierarchy of controls (30, 31). There is a need to move towards a cumulative risk assessment approach which includes addressing NCDs among employees (32). This approach offers a more holistic model for improving employees' safety, health, and well-being by promoting an integrated approach as outlined in the Total Worker Health (TWH) program by the National Institute for Occupational Safety and Health (NIOSH) (14).

The KOSPEN Plus program is monitored mainly using process indicators in the form of aggregated data rather than individual data. Hence, the researchers were unable to proceed further with inferential statistical analysis including hypothesis testing. Development of outcome and impact indicators in the future will allow better monitoring and evaluation of the program or intervention in achieving its intended objectives (33). This programme was mainly implemented in workplaces from the formal sector and minimal involvement of the informal sectors. Hence, the findings from this study should be generalized with caution across different job sectors (34).

## 5. Conclusion

The KOSPEN Plus programme is a comprehensive workplace NCD prevention programme comprised of several scopes designed to facilitate and create a healthy living culture among employees. It is a good platform for bringing health care closer to employees in both the public and private sectors. The increasing prevalence of NCD risk factors such as raised blood pressure raised blood glucose, overweight/obesity and mental health among employees indicates an urgent need for workplaces in Malaysia to adopt and implement this programme. The KOSPEN Plus programme

is recommended to be implemented in all workplaces.

## Conflicts of Interest

The author declares no conflict of interest.

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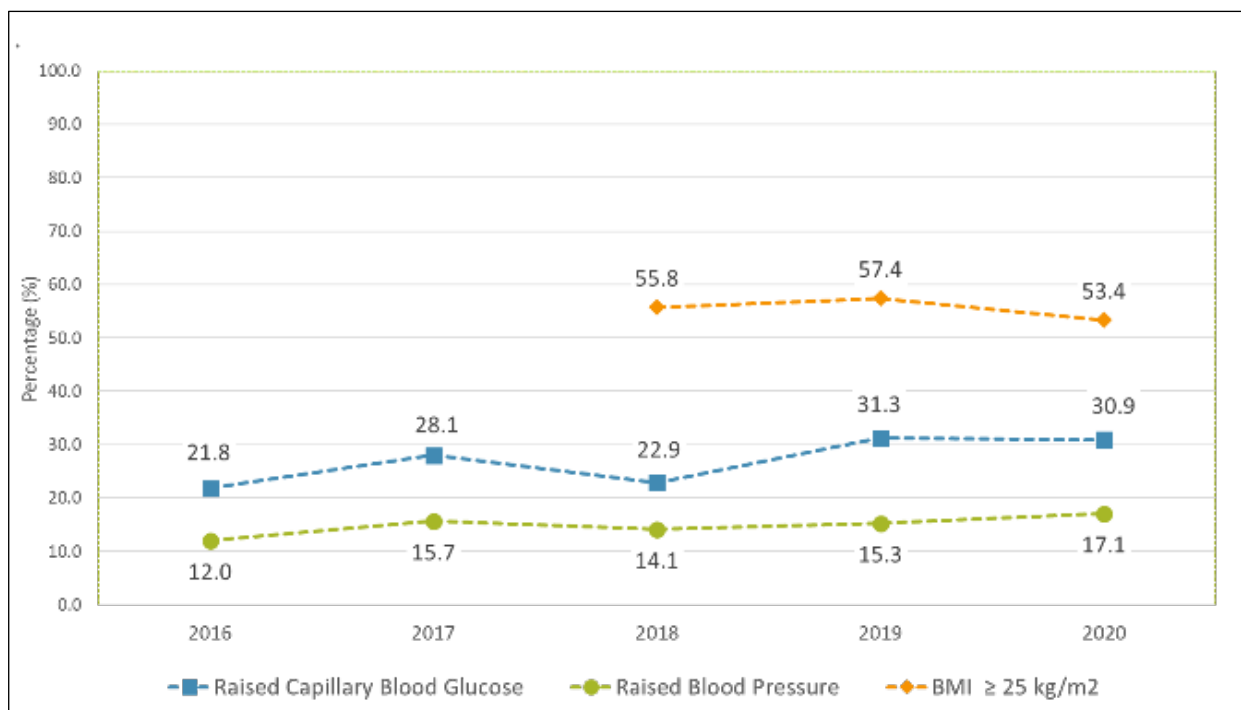


**Table 1.** Depression Anxiety Stress Scale (DASS-21) score

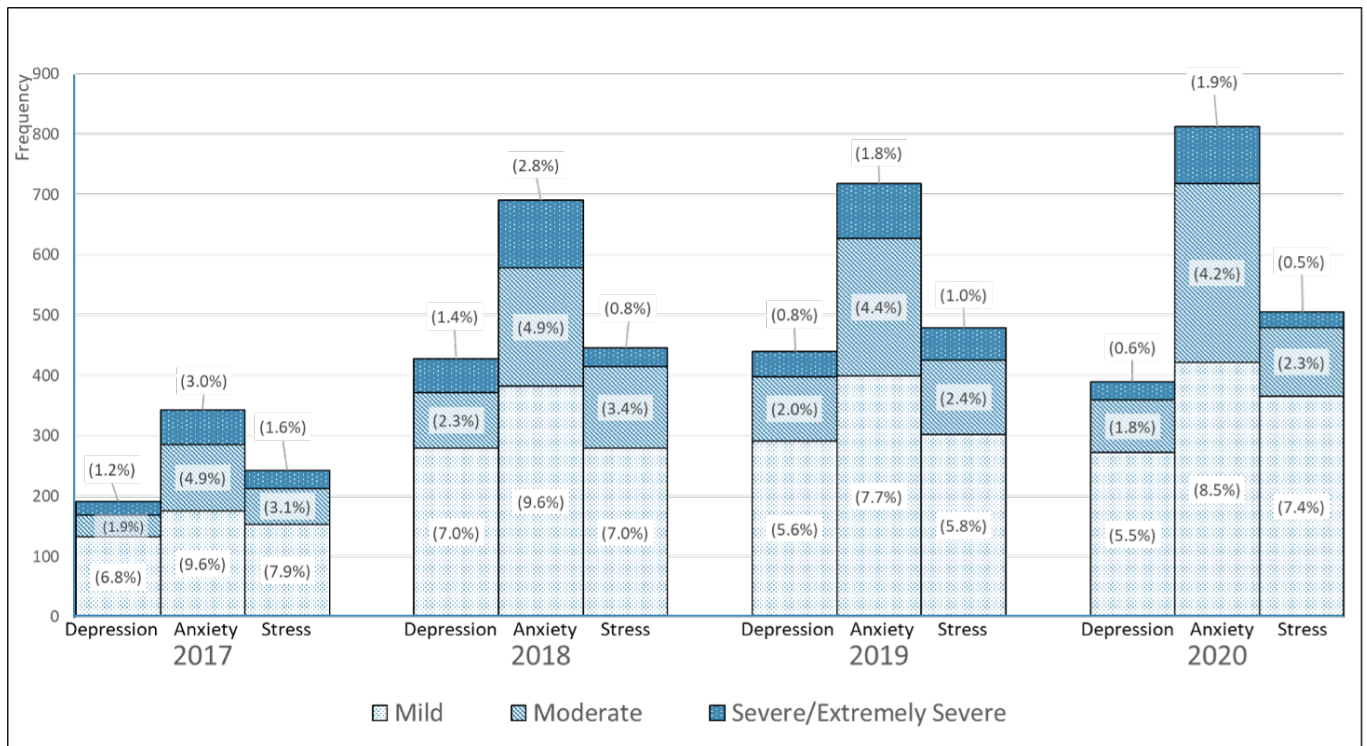
Subscale	Depression	Anxiety	Stress
Mild	6 - 7	5 – 6	8 - 9
Moderate	8 – 10	7 – 8	10 - 13
Severe/ Extremely severe	≥11	≥9	≥14

**Table 2.** Total agencies and employees participated in KOSPEN Plus program

Year	Total agencies		Total employ- ees	Eligible n (%)	Screened n (%)
	Public	Private			
2016	140	6	13,244	11,903 (89.9)	6,366 (53.5)
2017	156	38	16,603	13,247 (79.8)	9,636 (72.7)
2018	183	73	19,561	17,844 (91.2)	14,755 (82.7)
2019	201	56	13,190	12,237 (92.8)	10,773 (88.0)
2020	211	39	9,465	8,513 (89.9)	7,512 (88.2)



**Figure 1.** Prevalence of raised random capillary blood glucose level, raised blood pressure and BMI ≥25 kg/m<sup>2</sup> among employees in public and private agencies from year 2016 to 2020.



**Figure 2.** Mental health status according to depression, anxiety, and stress categories among employees from 2017 until 2020