

## HEALTHY LIFESTYLE INSTRUMENT

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### ABSTRACT

*The main purpose of this study was to develop an instrument to measure the Healthy Lifestyle among employees of KPTM Ipoh, KPTM Alor Setar, UniSHAMS and Intel Kulim. The sample was collected using self-administered questionnaire from 16 people for our focus group based on our sampling frame design and distributed four instruments for each strata group. The total instrument from the pilot study are 64 instruments. Three (3) constructs of the Healthy Lifestyle Instrument primarily consist of Fitness Wellness, Dietary Wellness and Behavior Wellness. The result of descriptive analysis show that the alpha reliability of the construct items in healthy lifestyle are acceptable. This would be express that the Healthy Lifestyle Instrument be considered reliable. However, in the exploratory factor analysis show that the findings are expanded from three factors to seven factors of employee healthy lifestyle practices. As related to this and previous analysis, we conclude that the Healthy Lifestyle Instrument are valid and reliable. However, this will require full data collection in order to fully validate the instrument. Therefore, the 3 aspects of employee's healthy lifestyle practices will remain the same as before the test performed. This is due to small sample size in pilot study. The same analysis procedure will be performed using sufficient sample size. However, in term of factor analysis in the main study, the finding of new emerge factors from the previous pilot study will be executed in order to conclude the final factoring involve.*

**Keywords:** health, lifestyles, exploratory factor analysis

## **1.0 INTRODUCTION**

A healthier way of life will always start with healthy selection and habits. Health can be defined as state of complete physical, mental and social and social well-being and not merely the absence of disease and infirmity. Furthermore, health also contributes to general well-being and overall lifestyle (Al-Amari & Al-Khamees, 2015). While, lifestyle is a pattern of behavior or a way individual typically live. The phrase of healthy lifestyle can be described in several ways. Healthy lifestyle is when someone is trying to prevent from health problems and hence maximize their personal well-being (Divine & Lepisto, 2005). The health of someone is mostly depending on the way of life and habit. Implement good habits will help someone live in positive ways and take care of their health (Biktagirona & Kasimova, 2016).

Meanwhile, World Health Organization described healthy lifestyle in three ways. The first one is the way of living that lowers the risk to get the serious ill or dying early such as coronary heart disease or lung cancer. The second definition is the way of living that enjoys more aspect of life. It is involve physical activities, mental and social well-being. The last one, healthy lifestyle is described as living in positive way and provide a better environment to the family and people around.

A lot of people out there have wrong definition of healthy lifestyle. Healthy lifestyle is not mean hours of training at the gym or only eating salad leaves. Healthy lifestyle is actually when a person doesn't smoke, tries to maintain normal body mass index (BMI) weight, eats healthy foods such as plenty of fruits, vegetables and fiber and of course do the exercises on a regular basis. There are also other elements that can contribute to a healthy lifestyle such as know how to manage stress, gets good quality sleep, does not drink too much and never takes drugs.

Healthy lifestyle is very useful in order to get a better life which can also contribute to body fitness and psychological health. Healthy lifestyle also means that a person have to take care of nutrition and food taking daily and so on. Following a healthy lifestyle ways also make a person do everything in moderation all the time. However, we cannot measure healthy lifestyle based on their appearance only. This is because a healthy lifestyle includes all aspects such as eating habits, exercise, rest and others. Without implement a healthy

lifestyle in our daily life it will contribute to get various type of disease. This can proof by Khera et al (2016), state that both genetic and healthy lifestyle are the factors contribute to individual level risk of coronary artery disease. Therefore, we can reduce the level of illness by implement a healthy lifestyle in our daily life. So, we come out with the instrument based on fitness wellness, dietary wellness, and behavior wellness that can measure level of healthy lifestyle. Therefore, this study is to develop an instrument that can measure healthy lifestyle based fitness wellness, dietary wellness and behavior wellness and to develop valid and reliable instrument based on pilot study.

## **2.0 LITERATURE REVIEW**

Healthy lifestyle choices are associated with mortality (King, Mainous, Carnemolla & Everett, 2009). Besides that, rate of incident cardiovascular event can be reducing if we adopt healthy lifestyle behaviors (Khera et al, 2016). Others chronic disease such as cancer, coronary heart disease (CHD), diabetes, and stroke can be prevent with healthy lifestyle (Chiuve et al, 2011). There is several combination of construct to defined healthy lifestyle according to researcher. According to Greer and Krebs (2006) and Silliman, Rodas-Fortier and Neyman (2004), they stated that diets and exercise are the combination construct to defined healthy lifestyle. But for Ford, Bergmann, Boeing, Li and Capewell (2012) and Chiuve et al (2011) not smoking also one of the construct that include in healthy lifestyle beside exercise and diet. Furthermore, in others study by Khera et al (2016), Demark-Wahnefriend and Jones (2008) and Chiuve, McCullough, Sacks and Rimm, (2006), they added up another construct for healthy lifestyle. The new construct is managing weight. This can be supported by Chiuve et al (2006) statement that healthy lifestyle choices such as diet, exercise, managing weight, and not smoking may reduce disease and improve lipids, blood pressure and others. Besides that, there is some article by Kurth et al (2006) and Loef and Walach (2012) claim that there are five constructs for healthy lifestyle. The combinations of constructs are not smoking, body mass index, moderate alcohol, exercise and healthy diet.

## **3.0 METHODOLOGY**

### **3.1 Instrument Design**

The instrument design has several steps which needs to be followed as shown in figure below which can be described into 3 main stages. The first stage is

construct item development. The second stage is validity test. And the third stage is reliability test. The subsequent sub-topics will discuss each stage in more details.

### **3.2 Construct Item Development**

This is the first stage. It all starts with the defined objective which is to create healthy lifestyle instrument. The construct and item design is derived from the literature review. There are 3 main constructs and items in the initial design as stated below:

- Fitness wellness: 5 items
- Dietary wellness: 9 items
- Behavior wellness: 11 items

Besides the main constructs and items, few demographics questions also included for reference. Those are for additional demographic information like age, sex, height, weight, race and others.

### **3.3 Measurement Scale**

For main constructs and items, measurement scale used is interval scale from 1-7. Interval scale is chosen because it can use the higher order statistical methods for analysis. Interval scale refers to the level of measurement in which the attributes composing variables are measured on specific numerical scores or values and there are equal distances between them.

Table 1: Measurement index

Level	Range
Unacceptable	1.00 – 1.99
Poor	2.00 – 2.99
Below average	3.00 – 3.99
Average	4.00 – 4.99
Good	5.00 – 5.99
Exceptional	6.00 – 6.99

### **3.4 Validation Process**

The second stage is validity test. Validity test is the ability of a scale to measure what is intended to be measured. There are 2 sequential validity tests which are 1) Content validity and 2) Face validity.

#### **Content Validity: Expert Validation**

The content validity basically requires expert validation. The true purpose of it is to examine the extent to which the test specification under which the test is constructed reflects the particular purpose for which the test is being developed. For our case, we asked for experts in the field to validate our proposed questionnaire. Based on their feedback, there were some changes made on the questionnaire design.

#### **Face Validity**

The face validity is done after content validity step. It is a qualitative measure of validity; meaning it is not quantified with statistical methods. Of all validity measures, the face validity is normally considered as the least scientific measure because untrained individuals but potential respondent chosen on the basis of convenience are involved, and because this measure is subjective and not quantifiable. This is done by using the focus group. Since our work involves respondents from 4 different organizations, we have formed a focus group at each organization and carried out the focus group discussion for face validity. The outcome from the focus group discussion from each organization been discussed and summarized. Then based on the result, some items were revised accordingly.

#### **Reliability: Pilot Study**

The last stage is reliability test. Reliability refers to the degree to which measures are free from random error and therefore yield consistent results. There are two components which are: 1) stability 2) internal consistency.

#### **Stability**

The test-retest method involves administering the same scale or measurement to the same respondents at two separate points of time to test for stability. If the measure is stable over time, the repeated test administered under

similar conditions should obtain similar results. High stability correlation, or consistency between the two measures at time one and time two, indicates a high degree of reliability. However for our work, the test-retest were not done due to time constraints due to tight schedule of semester.

### **Internal Consistency**

Internal consistency is usually measured with Cronbach's alpha, a statistic parameter calculated from the pairwise correlations between items. Internal consistency ranges from zero to one. For a reliable instrument, the Cronbach's alpha value must be  $> 0.6$ . Our work will use the pilot study data for the internal consistency test. Table below shows the commonly accepted rules.

Table 2: Cronbach alpha

Cronbach's alpha range	Reliability
$<0.6$	Poor
$0.6 - 0.7$	Acceptable
$0.7 - 0.9$	Good
$0.9 - 0.95$	Excellent
$>0.95$	Need to check, too high, could be due to redundant items

## **3.0 RESULT AND DISCUSSION**

### **3.1 Demographic**

Table 3 shows the demographic characteristics of the respondents enlisted into the survey. Briefly, respondents were enlisted from KPTM Ipoh, KPTM Alor Setar, UniSHAMS and Intel. There were equal proportions of male and female as well as academic/executive and non-academic/non-executive. The majority of the respondents were Malays, married and age between 29 until 38 years old. With regard to chronic disease, there have 4 respondents have chronic disease which is diabetes and high blood pressure. Meanwhile, most of the respondents from 4 company have Body Mass Index (BMI) is between 25 to 29.9, which is overweight. Even in young person, most of the respondents being overweight and it will also increases the chances of being obese. As well as it may directly increase the risk for certain health problems later in life.

Table 3: Socio – demographic characteristics of subjects of healthy lifestyle instruments

Characteristics	Frequency	Percentage
Gender		
Male	32	50%
Female	32	50%
Age		
18 - 28 years old	7	10.94%
29 – 38 years old	38	59.38%
39 – 48 years old	16	25%
49 – 58 years old	3	4.69%
Race		
Malay	52	81.25%
Chinese	8	12.50%
Indian	3	4.69%
Others	1	1.56%
Marital Status		
Single, never married	13	20.31%
Married	51	79.69%
Widowed	0	0%
Divorced	0	0%
Chronic Disease		
Yes	4	6.25%
No	60	93.75%
BMI		
Underweight	4	6.25%
Normal weight	19	29.69%
Overweight	25	39.06%
Obese	16	25%

### **3.2 Instrument Validation and Reliability**

In order for us to do further analysis, this survey was done using SAS Enterprise Guide 7.1. Data analysis for this survey had enabled us to produce estimates of statistics that would have been obtained to check validity and reliability in this instrument. In this study we use Exploratory Data Analysis (EDA) before to Cronbach alpha and Exploratory Factor Analysis (EFA) in analyses the instrument reliability. The graphical, box plot and value of mean were chosen to identify patterns of the items in each constructs.

#### **Construct 1: Fitness Wellness**

Table 4 displays the box plot of the five items for the first construct, fitness wellness interaction which comprises of five items together with Exploratory Factor Analysis (EFA) factor loading. All the box plot shows different pattern and consistency. Overall Cronbach's alpha for the 5 items is 0.8428. Box plot 1c (I participate in intense physical activities such as running or physical sports activity at least 3 days per week or 20 minutes per day) and 1e (I like to get information on healthy lifestyle program few times per week) are showing the value of mean is below average. Value of 1e is 3.71 closest to average and we can consider to maintain this item. Further, investigations by interviewing the respondents confirms that they love to attend healthy lifestyle program but did not want to attend a relevant program but less exposure on when to be held and where to find out about this healthy lifestyle program. On the other hand, in 1c most of them currently want to join coming running event and they will participate in running activity at least 3 days per week to training before the coming event. Meanwhile, box plot Item 1d (I do strengthening activities (go to gym) at least 2 times per week) has the mean 2.07813 which is poor refer to measurement index in Table 1, lowest EFA factor loading 0.43256 and highest Cronbach's alpha 0.840842 if this item is removed from the fitness wellness construct. However, we decide to rephrase this question considering do strengthening in anywhere not necessarily at gymnasium but it can be anywhere. Another exploration by interviewing the respondent confirms that they are preferred to do strengthening activities at home rather than go to the gym. This is due the fact they do not want spend money by entirely only going to the gymnasium. Study shows strength training is a part of being healthy lifestyle also have effects due to behavioural health (Sequin, Epping, Buchner, Bloch & Nelson, 2002). As we grow older we will lose muscle mass



and quality, with do strengthen activities can constantly rebuilding the muscle again (Hongu, Wells, Gallaway & Belgic, 2012). The other way around, there are outliers in this question that show some of candidates love to go the gym and said they love to keep fit and applied healthy lifestyle in their life.

Table 4: Fitness wellness: mean, EFA and cronbach alpha (pilot study, n= 64)

Items	EDA (Boxplot)	Mean	EFA factor loading	Cronbach alpha if item deleted
Q1a	<p>The values of the columns being stacked. The name of the column from which the value came.</p>	4.78125	0.69583	0.798013
Q1b		4.35938	0.67046	0.773026
Q1c		3.37500	0.62957	0.806377
Q1d		2.07813	0.43256	0.840842
Q1e		3.71875	0.56463	0.828607

Cronbach alpha = 0.842812

Items	Questions
Q1a	I keep check and control on my weight.
Q1b	I participate in light physical activities such as walking or gardening at least 5 days per week or 30 minutes per day.
Q1c	I participate in intense physical activities such as running or physical sports activity at least 3 days per week or 20 minutes per day.
Q1d	I do strengthening activities (go to gym) at least 2 times per week.
Q1e	I like to get information on healthy lifestyle program few times per week

### Dietary Wellness

From the box plot in Table 5 shows the box plot of the nine items for the second construct, dietary wellness interaction together with EFA factor loading. All the box plot represent different pattern and consistency. Overall Cronbach’s alpha for the 9 items is 0.710285. From the value of mean, most of the respondents know about healthy lifestyle in the same manner with eating a healthful diet (2a), prefer to eat more fruits and vegetables daily (2b), they consistently take breakfast daily (2d) and notice to drink at least 6-8 glasses of water daily (2e). Even most of the respondents know that they have to take meal 3 or more time weekly (2d) however they also know every

portion meal to have and they did not eat more than should eat (2i). In spite of, question 2h (Every day I take doughnut, sweet roll or candy bar) have the lowest value of mean 1.87692 and the lowest EFA factor loading 0.27647 but if this item is deleted the Cronbach's alpha is 0.699854 which is lower than overall Cronbach's alpha value 0.710285. Usually, based on these three values, we remove item 2h from the instrument but we decide to retain this item for the reason that almost respondents do not take food with high sugar content every day. Thus so, most of the respondent's still concern sugar intake in their every meals and this good representation in healthy lifestyle (Yang et al, 2014). Followed by item 2g (I take fast food at least 3 times a week) which has value of mean 2.63077 and value of factor loading 0.32591, less than 0.5. Generally, we remove this item from the instruments and after going throng exploratory data analysis it shows in positive ways that most of respondents unfrequently take fast food in their meals. Moreover, eating too much fast food over a long period of time can lead to health problems just as high blood pressure, heart disease and obesity (Poti, Duffey & Popkin, 2013). At last, item 2f (I drink 3 glasses of milk per day) also represent value of mean is 2.53846 and that is poor refer to measurement scale table above. According to Frank et al 2006, drinking three or four glasses of milk would meet your calcium needs on the other hand, generally Malaysian's people milk consumption is still very low ( Norimah et al, 2008)

Table 5: Dietary wellness: mean, EFA and cronbach alpha (pilot study, n= 64)

Items	EDA (Boxplot)	Mean	EFA factor loading	Cronbach alpha if item deleted	
Q2a		5.47692	0.60704	0.662722	
Q2b		5.03077	0.47927	0.678567	
Q2c		5.89231	0.26775	0.693154	
Q2d		5.04615	0.55385	0.669890	
Q2e		5.23077	0.60312	0.656003	
Q2f		2.53846	0.55059	0.662178	
Q2g		2.63077	0.32591	0.693416	
Q2h		1.87692	0.27647	0.699854	
Q2i		3.46154	0.26816	0.739249	
Cronbach alpha = 0.710285					
Items		Questions			

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Q2a	I know about eating a healthful diet.
Q2b	I prefer to eat more fruits and vegetables daily.
Q2c	I eat breakfast daily.
Q2d	I don't skip my meal 3 or more time weekly.
Q2e	I drink 6 – 8 glasses of water daily.
Q2f	I drink 3 glasses of milk per day.
Q2g	I take fast food at least 3 times a week.
Q2h	Every day I take doughnut, sweet roll or candy bar.
Q2i	I often eat more than that I should eat.

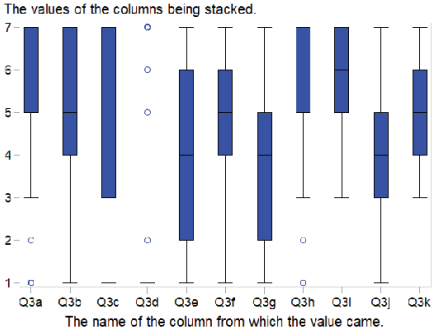
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### Behavior Wellness

Table 6 present pilot study results for the third construct, behavior wellness which comprises of eleven items together with box plot and EFA factor loading, mean, Cronbach's alpha and Cronbach's alpha value if the item deleted. The box plot shows inconsistency answer from respondents. Overall Cronbach's alpha for the 11 items is 0.767429. From the value of mean, most of the respondent avoid tobacco products (3a) and a few using tobacco products, consistently get 6-9 hours of sleep per night (3b), 70.31 % of respondent do not take drugs (3c) while the others said they take drugs in medicine concern into their health treatment. They also attend yearly medical check-ups (3e), can cope with stress in life (3f), and infrequently suffer from mood swings and attacks of anxiety (3g). In additions, show that they feel cheerful and hopeful (3i) also do not get sick often (3k). Box plots item 3d (I drink alcohol fewer than 5 times per week) is showing different pattern as compared to the other item. This item has the lowest value of mean 2.16923 and the lower EFA factor loading 0.22337 but if this item is deleted the Cronbach's alpha is 0.785606 which is higher than 0.767429. It is due to 81.25% of the respondent are Muslims and in Islam, consumption of any alcoholic beverages is generally forbidden in the Qur'an through separate verses revealed at different times over a period of years. Meanwhile, the other race shows they drink alcohol fewer than 5 times per week. For reason of that, we decide to retain this item for the reason people do not allowed drinking alcohol in healthy lifestyle and drinking a lot over a long time or too much on a single occasion can damage the heart and can causing problems including stroke and high blood pressure. In previous study, there is relationship between alcohol drinking and several types of cancer such as breast cancer, head and neck cancer, liver cancer and etc. (Room, Babor & Rehm, 2005). Box plot 3h (*I take out time for prayers, fasting*

and religious activities) show the lowest value of EFA factor loading 0.15717 due to some respondent answer no for this question, it is related part of our respondent are not Muslim and they said their never fasting in life. Thus, we will rephrase this question to be general and all the races take part in this survey.

Table 6: Behaviors wellness: mean, EFA and cronbach alpha (pilot study, n= 64)

Items	EDA (Boxplot)	Mean	EFA factor loading	Cronbach alpha if item deleted	
Q3a		5.63077	0.68942	0.712019	
Q3b		5.09231	0.51984	0.738024	
Q3c		5.46154	0.65405	0.728914	
Q3d		2.16923	0.22337	0.785606	
Q3e		3.96923	0.65815	0.728921	
Q3f		5.00000	0.58927	0.733406	
Q3g		3.64615	0.58282	0.734815	
Q3h		5.81538	0.24027	0.785261	
Q3i		5.83077	0.52043	0.756352	
Q3j		3.81538	0.15717	0.767210	
Q3k		4.93846	0.53357	0.759179	
Cronbach alpha = 0.767429					

Items	Questions
Q3a	I avoid tobacco products.
Q3b	I get 6 – 9 hours of sleep per night.
Q3c	I do not take drugs
Q3d	I drink alcohol fewer than 5 times per week.
Q3e	I attend yearly medical checkups.
Q3f	I can cope with stress in my life.
Q3g	I suffer frequent mood swings and attacks of anxiety.
Q3h	I take out time for prayers, fasting and religious activities.
Q3i	I feel cheerful and hopeful.
Q3j	I feel tired more often.
Q3k	I am well and do not get sick often.

#### **4.0 CONCLUSION**

The main purpose of this study was to develop an instrument to measure the Healthy Lifestyle. The three sections of the Healthy Lifestyle Instrument primarily consist of Fitness Wellness, Dietary Wellness and Behavior Wellness. The study describes the initial testing up to pilot study and the use such instrument in general to measure employee's healthy lifestyle practices. In this respect, for healthy lifestyle area the validity of the construct instrument was determined through the process in validating the content validity with the expertise then proceeded with the focus group validity in order to gain content validity.

The next step taken to do a pilot test based on the instrument proposed. Then results had been tested in term of reliability of the construct items. The results show that the alpha reliability of the construct items in healthy lifestyle area are acceptable. This would be express that the Healthy Lifestyle Instrument be considered reliable. However, the true reliability can only be validated with more sample or respondents. In addition, the final step of the analysis was conducted using the exploratory factor analysis.

Concerning to the current findings in Healthy Lifestyle Instrument, the 3 aspects of employee's healthy lifestyle practices would be maintained without the changing or reducing the items that emerge from the analysis. Note that all the construct items that had been developed before tended to be related to one another and valid based on value of Cronbach alpha. Therefore, the three aspects of employee's healthy lifestyle practices will remain the same as before the test performed. The same questionnaire will be used for future main study and the same analysis procedure will be performed using sufficient sample size.

Due to the limitations, the Healthy Lifestyle Instrument was developed as the determinant role of healthy lifestyle in promoting health and increasing quality of life among the employees with regarding to the background of institutional and industry or in term of private or government organisation. In many organisations, assessing employee healthy lifestyle practices towards job and employment resulted as new indicator of organization renewal effort that will improve employee health, reduce medical costs, increase productivity, and raise retention rates to understand the employee will contributes significantly

in improving the quality of employees in working life, and helps them live longer, free from diseases and illnesses. Healthy workers are more motivated to stay in work, recover from sickness quicker and are at less risk of long-term illness. In addition, organisations stand to make substantial cost savings by promoting health in the workplace and reducing sickness absence.

The used of this such instrument to measure employee healthy lifestyle practices will be beneficial to the successfulness of the organization towards Health, wellbeing and productivity in the workplace. As related to this and previous analysis, we conclude that the Healthy Lifestyle Instrument are valid and reliable. However, this will require full data collection in order to fully validate the instrument. Once validated, the finalized version should be used in further that can be adopted as tools to measure the healthy lifestyle practices among employees in difference area and gender towards their employment in future.

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