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TRANSFORMING WORKERS' HEALTH THROUGH LIFESTYLE MEDICINE: PROACTIVE STRATEGIES FOR REDESIGNING A HEALTHIER WORKPLACE

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ABSTRACT

Challenges such as unhealthy lifestyles, work-related stress, and lack of awareness about healthy eating exist in all sectors of employment. Workers often cannot engage in physical activities and lack resources to manage stress and maintain mental well-being. Despite existing efforts to promote workplace health, these issues persist, indicating a lack of current implementation strategies. The purpose of this study is to address these gaps by improving the implementation of Lifestyle Medicine (LM) concepts at work. The improved suggestion on implementation is based on LM and aims to promote healthy lifestyles and create supportive work environments. These efforts include health programs, workplace environment modifications, health education campaigns, and relevant policies. Based on a survey involving 28 organizations, the approach focuses on enhancing stress management, social connection, ergonomic features, and physical activity. Hence, this study enhances LM implementation to address persistent workplace health challenges aiming to foster a workplace culture that enhances employee health, productivity, and satisfaction.

Keywords: Lifestyle Medicine, Workplace Intervention, Ergonomic Features, Satisfaction, Health Promotion.

1.0 INTRODUCTION

Working conditions vary over sectors, but some challenges like inactive lifestyle, occupational stress, and unhealthy habits, exist in all sectors, where workers lack awareness of healthy diets, cannot partake in physical activities for their well-being, and lack the necessary resources to deal with stress and maintain mental well-being [1]. Approximately 2.3 million individuals the International Labour Organization (ILO) estimates have lost their lives due to work-related accidents or disease every year, which corresponds to an average of over 6000 deaths per day [2].

Stress is common in many work situations but is often more severe when employees feel unsupported by their supervisors and colleagues, as well as limited control over their work processes [3]. According to Hansen (2021), about 94% of workers feel stressed at work and nearly one-third of workers state that their stress levels are very high and unsustainable [4]. Exercise can improve physical condition, fight disease, and reduce stress [5]. The workers need to maintain their mental and physical health through LM. LM can be defined as a rapidly growing field in healthcare that focuses on intensive lifestyle modifications as a means to effectively treat chronic illnesses, resulting in remarkable improvements [6]. One example of an LM approach is the "Reverse Diabetes2 Now" program, which provides a multicomponent lifestyle approach including nutrition, physical activity, and psychological support; therefore, this program effectively reduces medication use, improve glycaemic control, and enhances health and quality of life in type 2 diabetes (T2D) patients over 24 months [7], which adds to the proof that LM can be effective in enhancing health and wellbeing.

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Through LM, a healthier workplace can be implemented. A healthy workplace can be defined as a place where risks are managed and a place where employers and employees work together to enhance the work environment and ensure the well-being of the worker [8].

Despite the global recognition of LM as an effective approach to improving health, its adoption remains limited in Malaysia. Globally, LM is increasingly acknowledged for its role in managing chronic diseases and promoting overall well-being [9]. However, in Malaysia, significant health challenges persist, as highlighted by the National Health and Morbidity Survey (NHMS) 2020. The survey reveals that 50.1% of adults in Malaysia are either obese (19.7%) or overweight (30.4%) [10]. NHMS (2020) also stated that in 2019, the percentage of physically inactive adults was 25.1%. Additionally, awareness on the Health Plate Concept (Suku Suku Separuh) was one-fifth of the adults with only 14.0% of them being aware of the concept [10]. This implies that rather small-scale adults incorporate the concept into their daily dietary habits. Furthermore, NHMS (2020) mentions that the prevalence of hypertension in Malaysia, both known and unknown cases was 15.9% and 14.1% respectively, with 30.0% overall and with an almost-constant trend of blood pressure cases compared to NHMS 2011 (32.6%) and NHMS 2015 (30.3%) [10].

Several interventions in Malaysia have been implemented to combat the non-communicable diseases (NCDs) issues. This includes the National Plan of Action for Nutrition of Malaysia (NPANM), Diabetes Lifestyle Programme (DLP), National Strategic Plan for Non-Communicable Disease (NSCPNCD), etc. And for occupational-related diseases include Komuniti Sihat Pembina Negara (KOSPEN) WOW (Wellness of Worker), Systematic Occupational Health Enhancement Level Program (SOHELP), Occupational Safety and Health Master Plan 2021-2025 (OSHMP2025), Stepwise OSH Level Verification and Enhancement for Small and Medium Enterprise (SOLVE4SME), etc.

Promoting a healthier lifestyle among employees such as nutritious food options, regular exercise, stress management, self-care, etc, can positively influence the well-being of employees [11]. According to Burton et al. (2020), LM and workplace wellness initiatives share the same philosophy, both approaches acknowledge that adopting a healthy lifestyle can prevent or treat a variety of physical and mental conditions [12]. They also mentioned that there are strong connections between employees' health and productivity. Therefore, this study will be conducted to identify the main aspects of workplaces and workers that need to be improved based on the LM concept and propose a detailed LM intervention.

This study intended to address the challenges in implementing LM by first gaining a comprehensive understanding of the concept through an extensive review of existing research. This is followed by the collection of feedback from industries and authorities that have implemented or are practicing the LM concept, which may involve various sectors of employment including healthcare, government bodies, etc. Subsequently, a suggestion for a new or enhanced workplace design that focuses on improving the effectiveness of the current implementation of LM will be proposed. This will focus on identifying the challenges and barriers faced by industries and authorities, and exploring how workplace design can be optimized.

2.0 METHODOLOGY

To address the objective of the study, which is to tackle the challenges associated with LM, a comprehensive literature review was first conducted to thoroughly explore the concept of LM. This thorough research aimed to uncover the various components and principles of LM, including nutrition, stress management, physical activity, risky substances, positive social connections, and sleep management. Through an in-depth analysis of existing research and scholarly literature, the study sought to understand the complex relationship between lifestyle factors and health outcomes. Additionally, feedback through survey questionnaire was distributed and the data was collected from industries and authorities that have implemented or are currently practicing LM, which aiming to provide practical insights of real-world challenges faced in the implementation of LM.

The overall research design involves a multi-phase approach, where initially, a comprehensive literature review was made to understand the concept of LM. This is followed by qualitative date collection through surveys with key stakeholders in various sectors. Finally, the gathered insights will be analyzed to suggest a new or enhanced workplace design aimed to improve the effectiveness of LM interventions. This methodological approach ensures a better understanding of both theoretical and practical aspects of LM.

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2.1 Identify Objectives of the Survey and Prepare a Questionnaire

Identification of the main objective of conducting the survey was made, and through this identification, a questionnaire was prepared. The questionnaire included questions related to the six pillars of LM which include nutrition, physical activity, sleep, stress management, risky substance intake, and positive social connection, as well as demographic information. It aimed to assess respondents' current understanding and implementation of these principles. The data collected from the survey will be used to suggest new or enhanced workplace design or implementation of LM in the workplace.

2.2 Industries and Companies Search for Survey Participation

The selection of participants for the survey was made by identifying organizations in various sectors that are actively implementing the LM concept or currently have no LM implementation in their workplace. This approach was designed to identify challenges related to both implementing and not implementing LM, regardless of the sector. The inclusion of diverse sectors aims to provide a broader perspective on the challenges and outcomes associated with LM across different industries. The survey invitations were then sent to these organizations, mentioning the study purpose and criteria.

2.3 Survey Conduct

The methodology for conducting the the survey includes contacting the participants of the survey and ensuring that they were fully aware of the study's objectives, their involvement, and their right to withdraw from participating in the survey. The survey was sent via email including a link to the survey, along with explanation of the survey's purposes and instructions for completion. Data privacy was maintained throughout the study. Collected data was securely managed and anonymized to protect participant identities. This approach protects the confidentiality of the participants and ensures that their responses were used solely for the purpose of the research. To ensure the reliability and validity of the questionnaire used in the survey, a pilot test was made with a small sample of participats to identify any issues with the question clarity, relevance, and overall comprehensibility. Following the pilot test, adjustments were made based on participant feedback to improve the questionnaire's effectiveness.

2.4 Data Analysis

The gathered information from the surveys was then used to determine the feasibility of improving or creating new workplace designs or implementing LM. During this analysis, the feasibility of creating new interventions was assessed by considering factors such as resource availability, implementation practicality, and potential impact on improving the identified aspects of workplaces and workers' well-being. The analysis also ensured that the proposed interventions were grounded in empirical evidence, applicable to the specific context of the study, and had the potential to effectively address the identified areas for improvement in workplaces and workers' well-being. Microsoft Excel software were utilized in data analysis. Excel charts were used to visualize data trends and relationships.

2.5 Propose Guides for Workplace Design Based on Lifestyle Medicine Concept

This section delved into the process of designing a workplace based on the insights gathered from the survey. If the result analysis indicated that there were current implementations of LM, improvements to the existing implementations were made. Alternatively, if the analysis suggested a lack of LM implementation, the focus was on designing a new workplace that incorporated LM principles. This ensured that the design not only reflected the specific needs and preferences of employees but also supported and promoted their overall well-being. The incorporation of ergonomic considerations, wellness zones, and other elements aimed to create a workplace that directly addressed the identified LM practices and preferences gathered through the survey. The ultimate goal was to foster a healthier and more conducive work environment based on the specific requirements and preferences uncovered during the survey process.

The methodology of the study, while reliable, heas several potential limitations that could affect the results. Sampling bias may be a concern as some participants may provide answers that do not reflect their true opinions or experiences. This can lead to skewed data and misrepresentation of the actual situation,

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affecting the study's accuracy. In terms of data analysis techniques, while Excel software was used effectively for data visualization, Excel may not handle large datasets which potentially affecting the depth of analysis.

3.0 RESULTS AND DISCUSSION

The survey targeted employees and employers across various industries to assess the implementation and awareness of LM in workplaces. With 28 responses from employees in different sectors, the majority were aged 35-44, with a majority being a female, and mostly based in Malaysia. The survey revealed that 50% of the respondents were aware of LM programs at their workplaces, with varying degrees of implementation across key LM areas like nutrition, physical activity, and stress management. While most understood the link between LM and managing chronic diseases, there was a noticeable gap in knowledge levels, indicating a need for greater awareness. Despite some positive implementations, challenges such as time constraints and resistance to change were common. Comparatively, Malaysian workplaces lagged behind other countries in LM implementation. Improvements were suggested to enhance workplace health, including better stress management, ergonomic designs, and promoting social connections among employees.

3.1 Target Group

The target participants for this survey are employees or employers in industries that have either implemented or not implemented the LM concept in their workplace. There are 28 responses to the survey which consists of employees from 28 different companies. Among the respondents shown in Figure 1, 14 individuals (50%) were in the range of 35 to 44 years old, while 6 individuals (21.4%) fell within the 45 to 54 years old category. Another 5 individuals (17.9%) belonged to the 25 to 34 years old range, with 3 individuals (10.7%) in the 18 to 24 years old category and no respondents aged 55 and above. From this analysis, the highest percentage is in the 35 to 44 year old range, and the lowest percentage is in the 18 to 24 year old category.

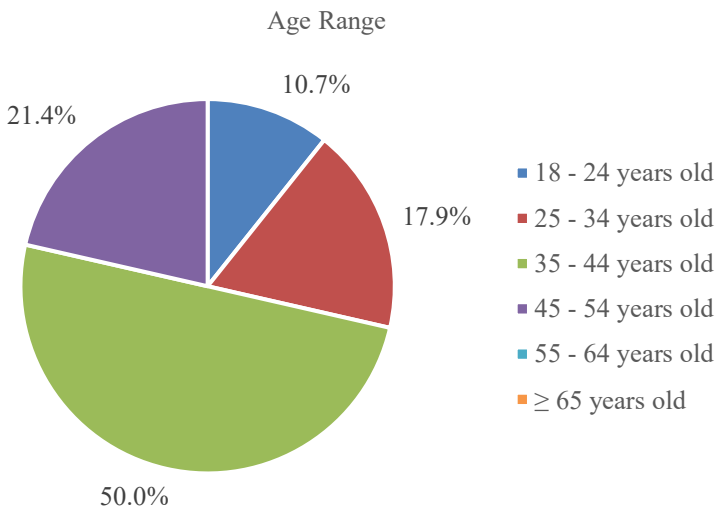


Figure 1. Age range of the respondents

Within the gender responses, 57.1% of the respondents are female, while the remaining 42.9% are male as shown in Figure 2.

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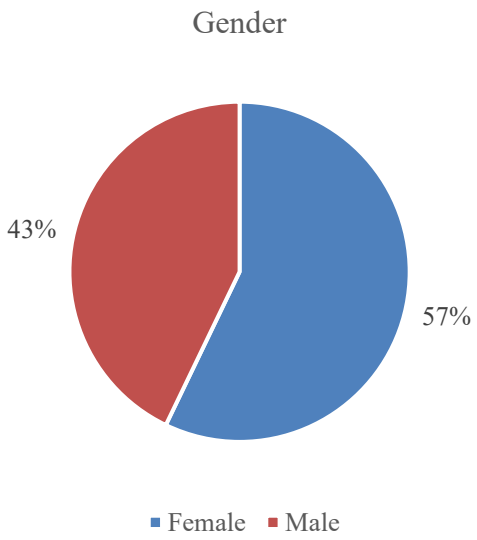


Figure 2. Gender classification

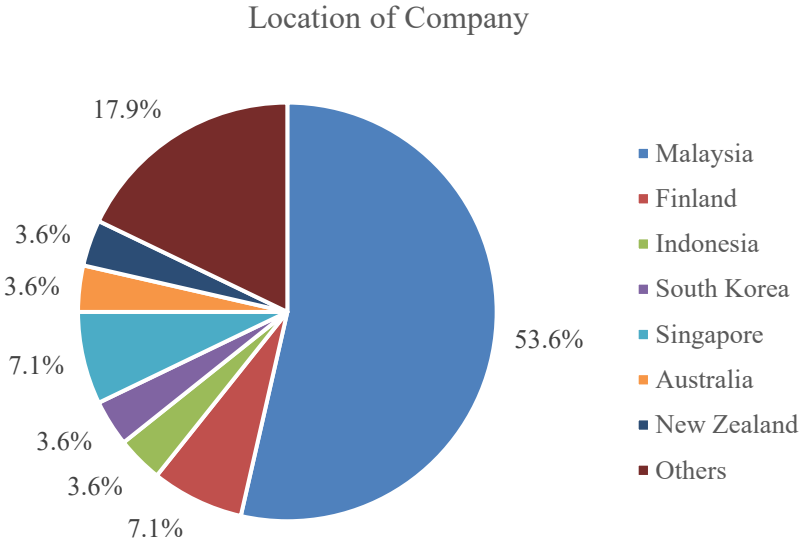


Figure 3. Current country of employment

From the responses (Figure 3), 53.6% of the respondents are currently working in Malaysia, 7.1% in Singapore and Finland, 3.6% in Indonesia, Korea, Australia, and New Zealand, and another 17.9% of the respondents prefer not to mention their current country of employment.

The majority of the respondents (Figure 4) are employed in the Education/Research and Oil and Gas industry, each comprising 25%, followed by the Manufacturing and Healthcare sector, 10.7%, and Business and Finance, 7.1%. The minority, making up 3.6%, are employed in Government, Mining, Agriculture, Engineering and Maintenance, Property development, and Information Technology sectors.

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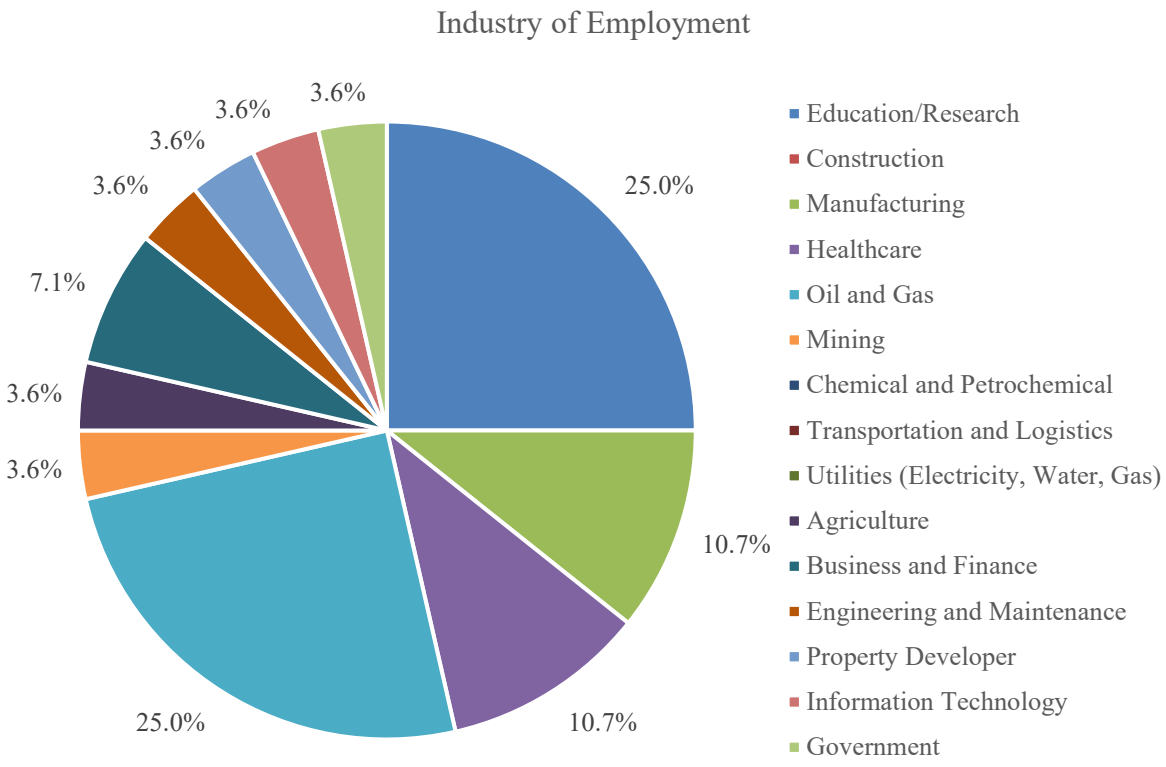


Figure 4. Respondent's current employment industry

To assess the implementation of LM in the workplace, respondents are asked how well-established their workplace in terms of health facilities is, such as restrooms, ergonomic workplaces, etc. The majority of respondents (50%) responded that their company has comprehensive and effective health facilities. Additionally, 42.9% indicated that there is an adequate establishment of health facilities, suggesting that their company has some facilities but has room for improvement. A minority of respondents (7.1%) responded that their company is not well-established in terms of health facilities, with limited or insufficient health facilities. These findings show that health in the workplace has been moderately emphasized, as the percentage of companies or industries with limited implementation or no implementation of health facilities is comparable with the percentage of companies or industries with well-established health facilities. To maximize the emphasis on health in the workplace, improvements can be made to promote a healthier work environment.

3.2 Assessing the Awareness and Knowledge of Lifestyle Medicine

To assess the awareness and knowledge regarding LM, several questions were asked of the respondents. Regarding the level of understanding of the LM concept as shown in Figure 5, 14 of the respondents (50%), constituting the majority, indicated a moderate understanding of the concept of LM, while 12 respondents (42.9%) responded with a very well understanding. One respondent mentioned having no understanding, and another stated having little understanding of the concept. From these responses, the percentage of respondents with moderate to zero knowledge of LM surpasses the percentage of respondents with a very good understanding of the concept of LM. This indicates that many people are still unaware of this concept, leading to poor lifestyle choices. Therefore, being aware of the LM concept is fundamental to a healthier lifestyle choice.

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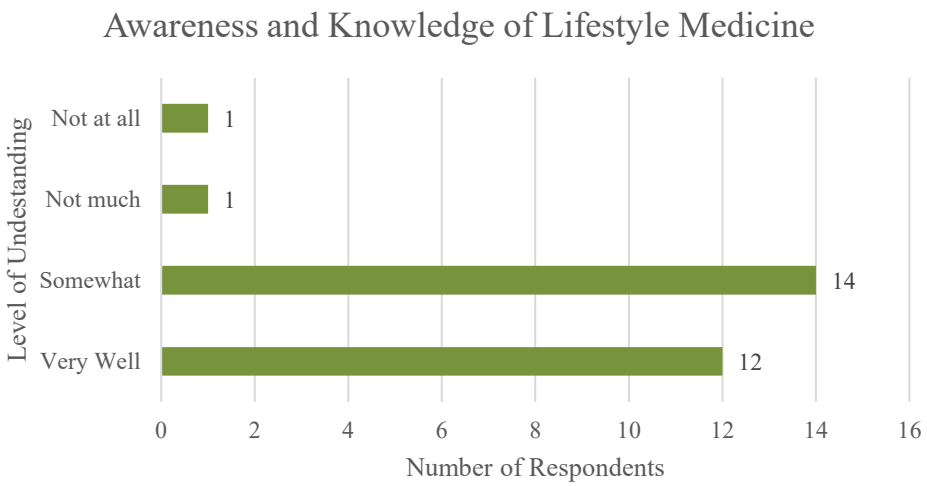


Figure 5. Data on awareness and knowledge of LM

With the responses indicating varied levels of acknowledgment regarding the link between LM and the prevention or management of chronic illnesses (Figure 6), 92.9% of the respondents agree that they understand the relation between the LM concept and the prevention or management of chronic illnesses, while the remaining 7.1% are unsure about the relation between the two. This indicates that the majority is aware of the connection between the two; and hence it proves that the respondents understand that LM can effectively reduce the risks of chronic diseases.

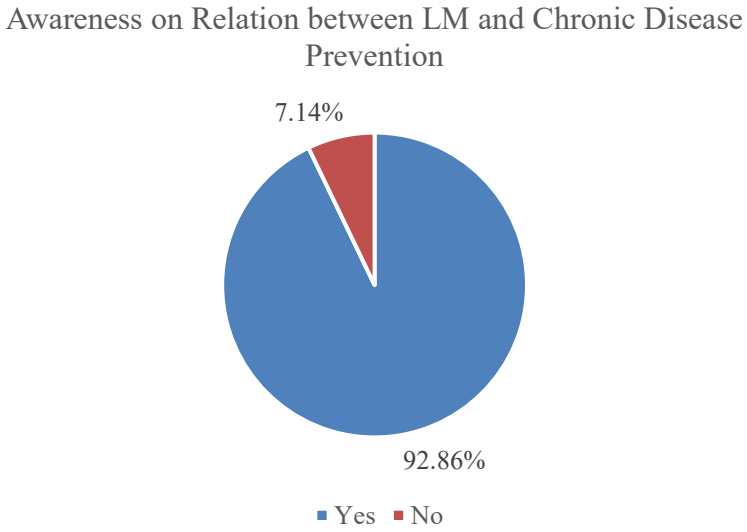


Figure 6. Relation of LM and Chronic Disease Prevention

3.3 Lifestyle Medicine Implementation in the Workplace

To study the quality of LM implementation in the workplace, several questions were posed to the respondents, including open-ended questions that allowed them to freely express suitable answers for each specific question. The first question focused on the awareness of the current implementation of LM programs in their workplace. The results, as shown in Figure 7, indicate that half of the respondents (50%) state that they are aware of the implementation of LM programs in their workplace. The next significant portion, comprising 28.57%, mentions that they are unsure if there are any LM programs implemented in their workplace, while the remaining 21.43% express not knowing about any implementation. This result indicates that a significant

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number of workers still are not concerned about the implementation of LM programs, suggesting there is either limited or no implementation in their workplace. This also reflects a lack of concern among workers for their well-being and healthy lifestyle in the workplace.

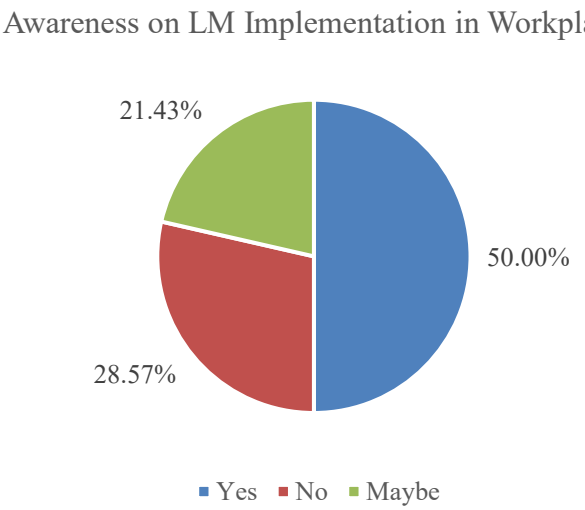


Figure 7. Awareness on LM Implementation in the Workplace

The second question inquired about the extent to which respondents rate the incorporation of lifestyle medicine principles in their workplace, aiming to gauge the level of integration and application of these principles in their work environment. This question was related to the six pillars of LM, which include nutrition, physical activity, sleep, stress management, risky substance intake, and positive social connection.

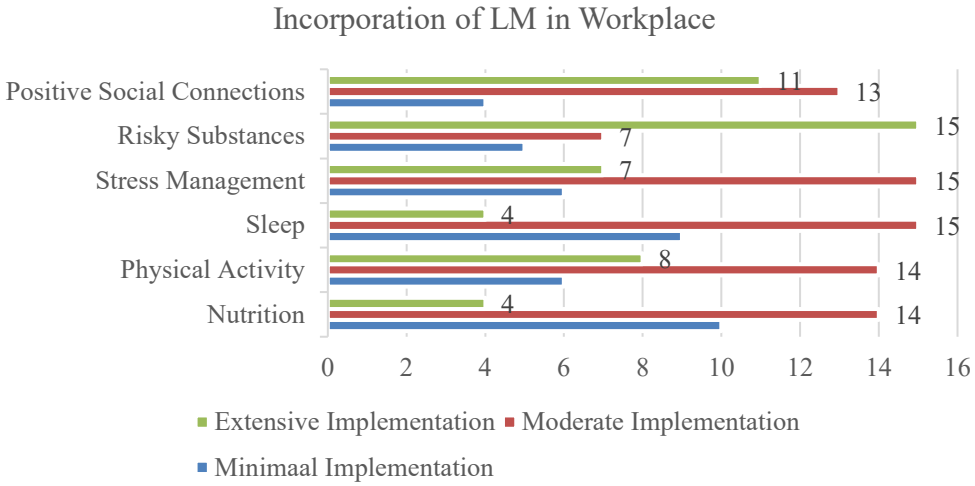


Figure 8. Awareness on LM Implementation in the Workplace

According to the result in Figure 8, the respondents mostly agree on a moderate implementation of the six pillars of LM in their workplace, with only risky substance intake receiving the highest vote for extensive implementation. This indicates that the implementation of LM in the workplace is currently at a moderate level. This suggests the potential for further enhancement and improvement in the implementation of LM in the workplace. Additionally, some respondents indicate that their workplaces have implemented LM practices at minimal to zero levels, suggesting a need for LM intervention that adheres to their current needs.

The next question inquiries about the current implementation of lifestyle medicine in their workplace. The respondents are asked whether there are current implementations of lifestyle medicine programs or

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initiatives in their workplaces. They are given four options to choose from: 'Yes, there are well-established programs', 'Yes, but they are in the early stages of implementation', 'No, there are no lifestyle medicine programs in place', and 'Not sure'. The results of the responses are shown below.

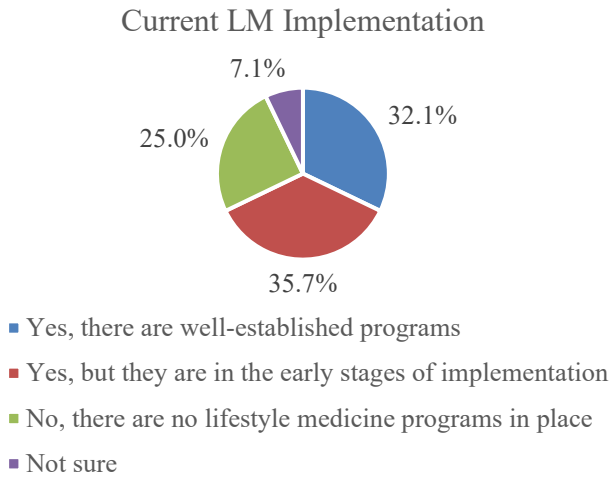


Figure 9. Current LM Implementation

The subsequent questions aimed to gather insights into the implementation of LM programs in workplaces, with respondents providing feedback on various aspects related to health and well-being initiatives. Almost all respondents reported the presence of LM programs in their workplaces, with specific attention given to the six pillars of LM: nutrition, physical activity, stress management, sleep, avoidance of risky substances, and positive social connections. Implementation strategies varied across these pillars, ranging from healthy diet initiatives and physical activity programs to stress management support and policies addressing risky substance use.

However, certain areas, such as stress management, were less commonly addressed, highlighting potential areas for improvement. Respondents identified key areas for enhancement, including stress management, physical activity promotion, and nutrition education. Suggestions included hiring additional staff to alleviate workload-related stress, organizing more frequent physical activities, and conducting awareness programs on sleep management.

Despite the positive implementation of LM programs, respondents also highlighted several barriers and challenges. The most common challenges included time constraints due to heavy workloads, particularly in industries with demanding schedules like oil and gas. Additionally, some respondents cited personal barriers, such as laziness and resistance to change, as hindrances to adopting a healthier lifestyle. Support from upper management was deemed essential in overcoming these barriers and fostering a workplace culture that prioritizes employee well-being.

In summary, while many workplaces have successfully implemented LM programs, there remain areas for improvement and challenges to overcome. By addressing these challenges and incorporating feedback from respondents, workplaces can further enhance their LM initiatives and create environments that promote employee health and well-being.

3.4 Assessing the Awareness and Knowledge of Lifestyle Medicine

The following questionnaire aimed to gauge employers' commitment to fostering healthier workplaces by assessing their opinions on resource allocation, examples of current initiatives, and suggestions for improvement. Most respondents agreed that their employers prioritize employee well-being, though some expressed uncertainty due to budget constraints or other priorities. Examples of current investments included vitality applications, gym memberships, health programs, and ergonomic workspaces. Respondents suggested enhancing existing programs by increasing sports facilities, offering healthier snacks, reducing workload through hiring, and implementing hybrid work schedules. Overall, respondents emphasized the importance of employer resource allocation for promoting employee well-being, citing its positive impact on productivity and overall workplace satisfaction.

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3.5 Implementation of LM in Malaysia in Comparison between Other Countries

The data from respondents reveals that Malaysian workplaces have a higher representation, with 65.2% of respondents, compared to other countries like Finland, Singapore, New Zealand, Australia, Korea, and Indonesia. However, analysis indicates that Malaysian companies lag in implementing LM compared to these other countries. Only 6 out of 15 Malaysian respondents reported well-established health facilities covering various aspects of LM, while the rest reported inadequate or no implementation. In contrast, respondents from other countries reported well-established LM implementations in their workplaces. This contrasts with more progressive implementations observed in countries like Finland and Australia, where different cultural attitudes towards workplace health may drive more comprehensive LM practices. These results support existing research suggesting that cultural factors, social traditions, and lifestyle choices can impact an individual's health status [13]. Nonetheless, direct comparisons between Malaysia and other countries may be limited due to the unequal distribution of respondents.

3.6 Proposed Improvisation or Implementation

The proposed workplace improvements, informed by survey responses and LM principles, prioritize stress management and social connection. To effectively implement LM principles in the workplace, organizations can incorporate features that significantly enhance employee well-being and productivity. A few improvements or interventions that could be made including green walls, quiet zones, and flexible working hours aim to alleviate stress and enhance mental well-being. Ergonomic features and fitness rooms promote physical health, while employee recognition programs foster social connections. Incorporating art installations, personalized workstations, and healthy snack stations further enriches the workplace environment and improves employee well-being. Regular physical activity challenges and initiatives like musical stairs encourage active lifestyles and employee social interaction.

Features like vertical green walls improve air quality and reduce stress, creating a calming atmosphere that supports mental well-being. Quiet zones offer spaces for focused work and relaxation, minimizing distractions and boosting productivity. Flexible working hours help employees balance their work and personal lives, reducing burnout and increasing job satisfaction. Ergonomic features like adjustable desks and supportive chairs prevent physical strain, leading to better health and improved productivity. Fitness rooms encourage regular exercise, benefiting physical health and reducing stress. Employee recognition programs enhance morale and motivation by acknowledging achievements. Art installations add aesthetic appeal to the workspace, positively affecting creativity and mood. Personalized workstations allow employees to tailor their environment for comfort and efficiency, leading to higher productivity and satisfaction. Healthy snack stations provide nutritious options, supporting better dietary choices and overall health. Regular physical activity challenges foster a culture of wellness and social interaction, while musical stairs make exercise enjoyable and help employees stay active. Together, these features create a supportive work environment that addresses physical and mental health, ultimately boosting employee satisfaction and performance.

For future research, it is essential to explore the long-term effects of these workplace interventions on health and productivity. Longitudinal studies could provide insights into how sustained implementation impacts employee outcomes, while comparative studies across different industries and cultural contexts could broaden understanding of the interventions' effectiveness. Employing advanced statistical methods could also help evaluate the effectiveness of specific interventions more rigorously.

However, the study has limitations such as a small sample size and potential sampling bias, which may affect the generalizability of the findings. Additionally, reliance on self-reported data could introduce inaccuracies. Addressing these limitations in future research by using larger, more diverse samples and incorporating objective measures would enhance the reliability and validity of the results.

4.0 CONCLUSION

This study aimed to investigate the challenges associated with implementing LM in various organizations, including both those with established LM practices and those without. The main findings reveal a diverse landscape of LM adoption, with companies displaying varying levels of engagement, from well-integrated programs to minimal implementation. Practical recommendations include incorporating features such as vertical green walls, quiet zones, flexible working hours, ergonomic enhancements, and employee

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recognition programs. These measures are intended to address specific challenges and improve workplace well-being and productivity. The broader implications suggest that these findings can guide policymaking and workplace wellness strategies, offering a basis for future research into the effectiveness and obstacles of LM practices. Limitations of this study, such as the potential for sampling bias and limited response diversity, may impact the generalizability of the findings. Future research should aim to explore these challenges more deeply by examining a wider range of organizations and assessing the long-term impacts of LM initiatives on employee health and organizational success.

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REFERENCES

[1] World Health Organization. 2016. Healthy workplace. World Health Organization. https://www.who.int/southeastasia/activities/healthy-workplace
[2] International Labour Organization. 2011, July 13. World statistic. World Statistic. https://www.ilo.org/moscow/areas-of-work/occupational-safety-and-health/WCMS_249278/lang--en/index.htm
[3] World Health Organization. 2021, October 19. Occupational health: Stress at the workplace. World Health Organization. https://www.who.int/news-room/questions-and-answers/item/ccupational-health-stress-at-the-workplace
[4] Hansen, B. 2021, November 8. Crash and burnout: Is workplace stress the new normal? Blog Wrike. https://www.wrike.com/blog/stress-epidemic-report-announcement/
[5] Anxiety & Depression Association of America. 2022, October 28. Physical activity reduces stress. Physical Activity Reduces Stress | Anxiety and Depression Association of America, ADAA. https://adaa.org/understanding-anxiety/related-illnesses/other-related-conditions/stress/physical-activity-reduces-st
[6] Freeman, K. J., M. L. Grega, S. M. Friedman, P. M. Patel, R. W. Stout, T. M. Campbell, M. L. Tollefson, L. S. Lianov, K. R. Pauly, K. J. Pollard, M. C. Karlsen. 2021, November 5. Lifestyle Medicine Reimbursement: A proposal for policy priorities informed by a cross-sectional survey of lifestyle medicine practitioners. MDPI. https://www.mdpi.com/1660-4601/18/21/11632
[7] Pot, G. K., M. C. Battjes-Fries, O. N. Patijn, N. van der Zijl, H. Pijl, , & P. Voshol. 2020. Lifestyle medicine for type 2 diabetes: practice-based evidence for long-term efficacy of a multicomponent lifestyle intervention (Reverse Diabetes2 Now). BMJ nutrition, prevention & health, 3(2), 188.
[8] World Health Organization. 2016. World Health Statistics 2016: Monitoring Health for the SDGs Sustainable Development Goals. World Health Organization.
[9] Ministry of Health Malaysia. 2020. The Impact of Noncommunicable Diseases and Their Risk Factors on Malaysia's Gross Domestic Product. Putrajaya, Malaysia: Ministry of Health Malaysia.
[10] Ezinwa, N. M. 2020. Global lifestyle medicine: for people who need it the most but have it the least. *American Journal of Lifestyle Medicine*, *14*(5), 541-545.
[11] Leaderonomics. 2021, November 15. 10 ways to encourage healthy lifestyle practices in your employees. Leaderonomics. https://www.leaderonomics.com/articles/functional/healthy-lifestyle-practices
[12] Burton, W. N., D. W. Edington, & A. B. Schultz. 2020. Lifestyle Medicine and Worker Productivity. *American Journal of Lifestyle Medicine*, 15(2), 136–139. https://doi.org/10.1177/1559827620948008
[13] Safeer, R., & Allen, J. (2019). Defining a culture of health in the workplace. *Journal of occupational and environmental medicine*, *61*(11), 863-867.
[14] Cambridge Dictionary. 2023. Lifestyle. https://dictionary.cambridge.org/dictionary/english/lifestyle
[15] Cambridge Dictionary. 2023b. Medicine. In Cambridge Dictionary. https://dictionary.cambridge.org/dictionary/english/medicine
[16] Aker, J. A. 2023, June 22. Lifestyle Changes Lead to Longer, Healthier Life. Military Health System. https://www.health.mil/News/Articles/2023/06/22/Lifestyle-Changes-Lead-to-Longer-Healthier-Life?type=Publications
[17] Bárcenas, M. 2022. Employee Productivity: The Ultimate Guide. Fellow.app. https://fellow.app/blog/management/employee-productivity-the-ultimate-guide-for-managers/
[18] Bieva, C. J., Courtois, Y., & Govaerts, M. 1989. In Present and future of Indoor Air Quality: Proceedings of the Brussels conference, 14-16 February 1989 (pp. 3–13). essay, Excerpta Medica.
[19] Buowari, D. Y. 2021. The Role of Lifestyle Medicine in the Management of Diabetes Mellitus. In IntechOpen eBooks. https://doi.org/10.5772/intechopen.99555
[20] Che Abdul Rahim, N., M. H. Ahmad, C. Siew Man, A. Zainuddin, W. S. Rodzlan Hasani, S. S. Ganapathy, & N. A. Ahmad. 2022, May 21. Factors influencing the levels of awareness on Malaysian healthy plate concept among rural adults in Malaysia. MDPI. https://doi.org/10.3390%2Fijerph19106257
[21] Corporate Wellness Magazine. 2023, July 12. The Relationship Between Employee Well-Being and Employee Engagement. Corporate Wellness | Employee Well-Being. https://www.corporatewellnessmagazine.com/article/the-relationship-between-employee-well-being-and-employee-engagement

DOI: https://doi.org/10.11113/jest.v7.167

[22] Dysinger, W. S. 2013, April 1. Lifestyle medicine competencies for Primary Care Physicians. *Journal of Ethics | American Medical Association*. https://journalofethics.ama-assn.org/article/lifestyle-medicine-competencies-primary-care-physicians/2013-04

DOI: https://doi.org/10.11113/jest.v7.167