

ENDEMIC COVID-19: INVESTIGATION AT WORK FROM HOME AMONG ACADEMIC STAFF IN UNIVERSITI PUTRA MALAYSIA FROM ERGONOMICPERSPECTIVE

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Abstract

Multiple organizations and industries underwent significant changes due to the global coronavirus (Covid-19) outbreak in 2020. Everywhere, even in higher education institutions, it has caused harm to people, the economy, organizations, workers, and jobs, compelling companies to switch to a Work from Home (WFH) business model to maintain business continuity. This study utilizes an ergonomic principle to investigate work from home among university academic staff during the Covid-19 pandemic. The survey comprised a sample of 228 academic staff members who were selected through a simple random sampling technique. The data was collected by administering questionnaires and subsequently analyzed utilizing the Statistical Package for the Social Sciences (SPSS) software. The measurement of the independent and dependent variables was conducted using Pearson correlation. Based on the demographic characteristics of the participants in this survey, the results revealed that a significant proportion of the respondents (63.2%) identified as female. Regarding age, most participants (108, or 47.4%) were between the ages of 41 and 40. Additionally, a significant correlation was observed between the working environment and the productivity of academic staff at UPM ($r = 0.384$). Consequently, the working environment emerges as the paramount determinant of productivity risk. The limited level of awareness regarding ergonomics education among Malaysian university academic staff may indicate the potential impact on their quality of life, working conditions, and overall health.

Keywords: Covid-19, Work from home, Academic staff, Ergonomic, Productivity

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Abstrak

Pelbagai organisasi dan industri mengalami perubahan yang ketara disebabkan oleh wabak coronavirus global (Covid-19) pada tahun 2020. Di mana-mana, walaupun di institusi pengajian tinggi, ia telah menyebabkan kemudaratan kepada orang ramai, ekonomi, organisasi, pekerja dan pekerjaan, memaksa syarikat untuk beralih kepada model perniagaan Work from Home (WFH) untuk mengekalkan kesinambungan perniagaan. Kajian ini menggunakan prinsip ergonomik untuk menyiasat kerja dari rumah di kalangan kakitangan akademik universiti semasa pandemik Covid-19. Kajian ini terdiri daripada sampel 228 kakitangan akademik yang dipilih melalui teknik pengambilan sampel rawak mudah. Data dikumpulkan dengan mentadbir soal selidik dan kemudiannya dianalisis menggunakan pakej statistik untuk perisian sains sosial (SPSS). Pengukuran pembolehubah bebas dan bersandar telah dijalankan menggunakan Korelasi Pearson. Berdasarkan ciri demografi peserta dalam tinjauan ini, hasilnya menunjukkan bahawa sebahagian besar responden (63.2%) dikenal pasti sebagai wanita. Mengenai usia, kebanyakan peserta (108, atau 47.4%) berusia antara 41 dan 40 tahun. Di samping itu, korelasi yang ketara diperhatikan antara persekitaran kerja dan produktiviti kakitangan akademik di UPM ($r = 0.384$). Akibatnya, persekitaran kerja muncul sebagai penentu utama risiko produktiviti. Tahap kesedaran yang terhad mengenai pendidikan ergonomik dalam kalangan staf akademik Universiti Malaysia mungkin menunjukkan potensi kesan terhadap kualiti hidup, keadaan kerja, dan kesihatan keseluruhan mereka.

Kata kunci: Covid-19, Bekerja dari rumah, Kakitangan akademik, Ergonomik, Produktiviti

Introduction

The current novel coronavirus outbreak, Covid-19 (WHO, 2020), led national governments worldwide to urge individuals to work from home (WFH) by mid-March 2020 unless they had occupations of extreme necessity. While WFH arrangements have been popular recently, most companies and institutions could not prepare their employees for this arrangement when the pandemic broke out. Many were caught off guard by the quick turn of events and found themselves confined in their homes after the lockdown announcement (Seva et al., 2021). The current novel coronavirus outbreak, Covid-19 (WHO, 2020), prompted national governments worldwide to urge people to work from home (WFH) by mid-March 2020 unless they had necessary jobs. Most businesses and institutions could not prepare their staff for WFH arrangements when the pandemic first started, even though they had become more common in recent years. The sudden sequence of events took many individuals by surprise, resulting in their confinement within their residences subsequent to the declaration of a lockdown (Seva et al., 2021).

The practice of remote work has experienced a surge in popularity amidst the quarantine measures implemented in response to the Covid-19 pandemic. This trend has been observed as numerous countries adopt a strategy of physical distancing in order to mitigate the spread of the virus. Consequently, remote employment has emerged as the exclusive alternative for specific individuals within the workforce. This circumstance can potentially impact the productivity and well-being of the healthcare professional involved. The variables under investigation in this study include the working environment, lifestyle, and health status, considered independent variables. The dependent variable in this research is employee productivity.

The Covid-19 pandemic on the working environment has consequences on academic staff productivity at UPM. One potential drawback of children studying at home during this period is the possibility of diverting their parents' attention from work due to their engagement with school-related matters, particularly for younger children or other miscellaneous concerns. In contrast, engagement in household tasks could potentially serve as a form of diversion. Numerous employees experience a sense of duty to engage in domestic tasks such as cooking or cleaning while fulfilling their professional responsibilities from their residences. According to the findings of Mohd Makhbul et al. (2009), a workstation environment characterized by high temperatures, low lighting levels, and a crowded workspace has been found to be connected with increased stress levels in the workplace. The environment encompasses various elements, such as the humidity system, lighting, workspace design, acoustic system, and other factors. Given the circumstances mentioned earlier, it is imperative to consider several elements, particularly ergonomics, while constructing a workstation (Yeow et al., 2021). The absence of adherence to ergonomic principles within work environments has been found to have negative consequences, including emotional depression, physical exhaustion, and a decrease in both productivity and product quality (Shekaran & Sawaqed, 2003; Mohd Makhbul et al., 2013). Most individuals who engage in remote work mainly utilize computer technology.

Laptops have been associated with various musculoskeletal ailments and health complications. Musculoskeletal symptoms (MSDs) are commonly observed among individuals who use computers in several professions, presenting as pain and other grievances in the neck, shoulders, arms, wrists, and lower back region (Vinothini et al., 2018). The prevalence of musculoskeletal disorders (MSDs) among computer users can be attributed to several factors, including extended periods of sedentary behavior, suboptimal ergonomic setups, uncomfortable body positions, and repetitive tasks. The presence of discomfort or pain has negative consequences on various dimensions of an individual's work performance, including but not limited to focus, cognitive abilities, rationality, mood, mobility, stamina, agility, and other physical elements (Seva et al., 2021). The work environment is subject to the influence of workloads, which in turn impact employee productivity and health.

Furthermore, lifestyle is considered to be one of the key elements that exert an influence on productivity. The lifestyle characteristics assessed in this study encompassed several aspects of physical activity, including overall levels of physical activity such as standing and step count, engagement in structured physical exercises such as exercise classes, walking, jogging, and biking, as well as dietary habits, including overall food intake, consumption of "healthy" foods, and intake of "junk" foods. Regarding dietary habits, it is evident that a significant proportion of individuals in the workforce do not consistently consume nourishing meals due to time constraints, often resorting to the consumption of fast food or unhealthy snacks. A significant number of workers depend on fast food establishments and express dissatisfaction with the limited availability of healthy dining options that are convenient for their busy schedules. The weight gain phenomenon can be attributed to a confluence of factors, including inadequate physical activity, an excessively sedentary lifestyle, and an unhealthy dietary pattern. Moreover, it is well established that academic personnel have limited opportunities to allocate their time outside of their professional commitments, dedicating the majority of their day to their work. Due to time constraints impeding self-care, individuals often encounter difficulties engaging in activities such as attending the gym and exercising.

The state of an academic employee's health can affect their productivity. According to the findings of N. et al. (2022), a consistent association exists between worker health and productivity, whereby a higher prevalence of health issues reported by workers corresponds to lower production levels. The presence of eye strain, symptoms connected to the nose, weariness, headaches, and mental health conditions such as anxiety, depression, stress, and sleeplessness can significantly impede productivity. The concept of worker presenteeism has garnered increasing attention in academic studies as it pertains to diminished job performance resulting from physical and mental health challenges. In addition, the individuals' health may be adversely affected by their working schedule, leading to musculoskeletal conditions and subsequent discomfort. Obesity can potentially serve as a risk factor for the development of musculoskeletal problems in the workplace. The correlation between musculoskeletal disorders and body mass index (BMI) is particularly noteworthy. Academic personnel may face an elevated susceptibility to disturbances in the human circadian rhythm, as well as experiences of fatigue, melancholy, psychological strain, insomnia, and various other diseases. There are individuals within the workforce who engage in the use of alcoholic beverages, which inevitably has an impact on their overall health. The intake of alcohol, specifically binge drinking, has the potential to cause several health issues in both the short and long term. These health problems encompass unintentional injuries, alcohol poisoning, liver disease, and cancer. Therefore, factors such as the working environment, health status, and productivity can significantly impact workers' productivity and health if not effectively addressed from the outset. Employee performance may be indirectly impacted, leading to potential disruptions, while personal health may also be harmed.

Method

This study was conducted at the University Putra Malaysia in Serdang, Selangor. According to the Ministry of Higher Education (2021), the total number of academic staff registered at UPM in 2021 is approximately 1830. The basic random selection technique was used in the studies, with 228 academic staff members participating. The participants in this study consist of academic personnel affiliated with UPM. The research instrument was developed in both English and Malay.

The survey approach was used to interview academic personnel at the University Putra Malaysia. Before the commencement of the interview session, a letter of consent was provided to the respondents, who were then requested to affix their signature to the document as an indication of their voluntary agreement to participate in the study. Each interview session lasted around 20 minutes and was performed in person face-to-face. Respondents were briefed on the purpose of the study and the types of activities that would be carried out before the interview session. The confidentiality of all personal information pertaining to the respondent is ensured, and no disclosure to the public will occur.

The questionnaire contains seven breakdown sections to be used throughout the interview process with the respondents. The portion is broken down into sections: section A: demographic data; section B: working environment; section E: lifestyle; and section F: productivity of academic staff.

This study's data analysis employs both descriptive and inferential statistics. Descriptive analysis and Pearson correlation are used. According to Bihani and Patil (2014), data analysis aims to encrypt, edit, and interpret raw survey data into more understandable and comprehensible information. Statistical Package for Social Sciences (SPSS) Windows Version 23.0 was used to analyze the data statistics in this study. Descriptive and inferential statistics were explicitly used to present the data analysis.

Result and Discussion

Socio-demography

The figures in Table 1 indicate the demographics of the academic staff at UPM. This section discusses eighteen factors, primarily about responder personal data such as age in 2022, weight, height, BMI, income, gender, race, status, spouse's job, number of children, kind of placement, work status, and duration of service as academic staff at UPM. The findings revealed that 47.4% of the total respondents, or the majority of respondents were between the ages of 41 and 50. The maximum BMI result was between 18.5 and 24.9 (49.6%), within the normal range. In addition, it revealed that

women made up 63.2% of respondents, compared to men's 36.8%.

Additionally, through the distribution of questionnaires answered by academic staff, it has been discovered that their salaries are in the range of RM4,851–RM10,970 (59.2%). Among the races of these respondents, the majority are Malays, with a percentage of 77.2%, followed by Chinese (12.7%), Indian (9.6%), and others with only 0.4%. Only 9.2% of academic staff members are still single, compared to 89.5% of married people, followed by divorced and widowed people (0.9% and 0.4%, respectively). Among the 204 married academic staff members, 9.6% are housewives, while the remaining have their own careers. The average number of children owned is 2 (30.3%), and children make up 89.9% of the academic staff. Additionally, the placement of academic personnel is 100% in urban areas, according to the results of the kind of placement. Out of that total, 87.3% live in their own home, while 12.7% rent a home. 99.1% of academic staff members drive their own cars to school. The majority of academic personnel who responded are full-time workers, and many have been at UPM for 5–10 years (51.3%).

Table 1: Respondent's Demographic Profile

Statement	N	Percent (%)	Min	Max
Age in 2022				
<30	4	1.8	29	58
31-40	68	29.8		
41-50	108	47.4		
>50	48	21.1		
BMI				
<18.4	18	7.9	16.2	32.0
18.5-24.9	113	49.6		
25.0-39.9	97	42.5		
Income (RM)				
<4,850	87	38.2	3,000	13,500
4,851-10,970	135	59.2		
>10,971	6	2.6		
Gender				
Male	84	36.8		
Female	144	63.2		
Race				
Malay	176	77.2		
Chinese	29	12.7		
Indian	22	9.6		
Others	1	0.4		

Table 1(continues)

Statement	N	Percent (%)	Min	Max
Status Married				
Single	21	9.2		
Married	204	89.5		
Divorce	2	0.9		
Widow	1	0.4		
Do you have children?				
Yes	205	89.9		
No	23	10.1		
Oldest Age				
No	33	14.5		
<5	5	2.2		
6-10	27	11.8	0.00	29.00
11-15	44	19.3		
16-20	50	22.0		
>21	69	30.2		
Type of Placement				
Urban	228	100.0		
Rural	0	0.0		
Homeownership				
Private	199	87.3		
Rented	29	12.7		
Vehicle to work				
Private car	226	99.1		
E-hailing	2	0.9		
Work Status				
Part-time	0	0.0		
Full time	228	100.0		
Length of service as Academic Staff in UPM				
<1 year	26	11.4		
2-4 years	117	51.3		
5-10 years	85	37.3		

*N=228

Working environment

According to the findings, a significant proportion of academic personnel, precisely over 32.5%, agreed that they experience discomfort in their workspace while working

from home, resulting in physical discomfort in somebody regions. Subsequently, a total of 32.0% of respondents indicated their agreement. In comparison, 25.9% expressed strong agreement with the assertion that they experience disturbance from their environment (specifically, interference from children or family members) while engaged in remote work. Moreover, in relation to the assertion "amidst the Movement Control Order (MCO), I experience heightened time constraints in my work," a significant majority (43.4%) of academic personnel express a strong concurrence with this statement. In addition, it is worth noting that 40.8% of respondents agreed. In comparison, 24.1% strongly agreed, "Typically, postures such as sitting and crossing legs become habitual when utilizing a laptop/computer." According to the survey results, 43.4% of respondents strongly agree with the assertion that they experience time pressure when working during the Movement Control Order (MCO) period.

Furthermore, concerning the assertion "I feel at ease performing office tasks in a dimly lit setting," it is worth noting that 35.5% of respondents strongly disagree, 16.2% disagree, and 9.6% remain neutral in their stance towards the statement "I engage in office work until late hours of the night." Additionally, a majority of the academic staff, precisely 36.0%, concur with the assertion that their work performance is poor. Influenced by the appropriate arrangement of tables and chairs. The majority of academic staff responded neutrally to the assertion that "The room temperature is too cold, causing discomfort in my joints and muscles while working." This finding is consistent with the research conducted by Al-Omari and Okasheh (2017), which suggests that the temperature component does not significantly affect employees' job performance and can be disregarded. According to Sehgal (2012) and further supported by Al-Omari and Okasheh (2017), the optimal temperature for maximizing production is contingent upon an individual's physiological characteristics. The effects of temperature are multifaceted and pose challenges in terms of comprehension.

Table 2: Analysis of Working Environment

Statement	Frequency	Percentage (%)
Having a comfortable workspace while working from home causes some of my body parts to feel sore.		
Strongly Disagree	13	5.7
Disagree	33	14.5
Neutral	67	29.4
Agree	74	32.5
Strongly disagree	41	18.0

Table 2 (continues)

Statement	Frequency	Percentage (%)
Feel disturbed by the environment (interference from children/family) while working from home.		
Strongly Disagree	16	7.0
Disagree	26	11.4
Neutral	54	23.7
Agree	73	32.0
Strongly Agree	59	25.9
Feel disturbed when I have to share the workspace with family members (husband/wife/children).		
Strongly Disagree	3	1.3
Disagree	34	14.9
Neutral	31	13.6
Agree	91	39.9
Strongly Disagree	69	30.3
During MCO, I work under time pressure.		
Strongly Disagree	8	3.5
Disagree	20	8.8
Neutral	43	18.9
Agree	58	25.4
Strongly Agree	99	43.4
Normally, postures such as sitting and crossing legs become my routine when using a laptop/computer		
Strongly Disagree	8	3.5
Disagree	18	7.9
Neutral	54	23.7
Agree	93	40.8
Strongly Disagree	55	24.1
Feel comfortable doing office work in a dark environment.		
Strongly Disagree	81	35.5
Disagree	37	16.2
Neutral	22	9.6
Agree	53	23.2
Strongly Agree	35	15.4
Practice doing office work until late at night.		
Strongly Disagree	49	21.5
Disagree	47	20.6
Neutral	39	17.1
Agree	53	23.2
Strongly Agree	40	17.5

Table 2 (continues)

Statement	Frequency	Percentage (%)
Send office work more than the specified time.		
Strongly Disagree	41	18.0
Disagree	43	18.9
Neutral	55	24.1
Agree	44	19.3
Strongly agree	45	19.7
Missed any work activities online.		
Strongly Disagree	18	7.9
Disagree	46	19.7
Neutral	76	33.3
Agree	59	25.9
Strongly agree	29	12.7
My work performance affected by the proper placement of table and chairs.		
Strongly Disagree	17	7.5
Disagree	25	11.0
Neutral	57	25.0
Agree	82	36.0
Strongly agree	47	20.6
The room temperature is too cold causing my joints and muscles to ache while working.		
Strongly Disagree	12	5.3
Disagree	29	12.7
Neutral	95	41.7
Agree	51	22.4
Strongly agree	41	18.0

*N=228

Health Status

Table 3 shows the lifestyle of academic staff. The majority (68.9%) agree to do sports activities during the week. For “the total frequency of doing sports activities in a week,” 34.2% answered once a week, and 33.8% answered 2-3 times a week. More than half (54.4%) respondents who exercise 1-2 hours, followed by 14.0% (3-4 hours). Besides that, in the question “Do you ever miss a meal at work,” 72.4% of respondents answered YES, and 27.6% respondent answered No. Following that, the question “if yes, state the mealtime,” 44.7% missed meals in the morning, 14.9% missed meals in the afternoon, and 13.6% missed meals in the evening. For the question “How many times do you eat in a day,” there is an answer of two times in a day (58.8%). There are 75.0% of respondents answered Yes, and 23.7% answered rarely “Do you eat healthy food.” Next, for the question “Do you practice eating junk food in a day,” there are 24.6% of respondents who answered Yes, 66.7% respondents who answered rarely. For the question, “have you ever neglected your

mealtime while doing office work at home,” there are 93 (40.8percent) answered yes, 109 (47.8 percent) answered rarely, and 26 (11.4 percent) answered never.

Table 3: Analysis of Lifestyle Academic Staff

Statement	Frequency	Percentage (%)
Are you going to do sports during the week?		
Yes	157	68.9
No	71	31.1
The total frequency of doing sports activities in a week.		
Once a week	78	34.2
2-3 times a week	79	34.9
No	71	32.0
Estimated time each time doing sports activities.		
1-2 hours	124	54.4
3-4 hours	32	14.0
More than 4 hours	1	.4
No	71	31.1
Do you ever miss a meal at work?		
Yes	165	72.4
No	63	27.6
If yes, state the meal time.		
Morning	102	44.7
Afternoon	34	14.9
Evening	31	13.6
Night	2	9
No	59	25.9
How many times do you eat in a day?		
Once	35	15.4
2 times	36	15.8
3 times	134	58.8
More than four times	23	10.1
Do you eat healthy food?		
Yes	171	75.0
Rarely	54	23.7
Never	3	1.3
Do you practice eating junk food in a day?		
Yes	56	24.6
Rarely	152	66.7
Never	20	8.8

Table 3 (continues)

Statement	Frequency	Percentage (%)
Have you ever neglected your mealtime while doing office work at home?		
Yes	93	40.8
Rarely	109	47.8
Never	26	11.4

*N=228

Productivity academic staff

Table 4 shows the statement "Most days I am passionate about my work when I work from home" received a neutral response from nearly half (47.4%) of academic workers. More than half (53.9%) of academic staff members agree with the statement, with 30.3% giving neutral or no responses and 0.4% strongly disagreeing. However, the statement "I feel quite satisfied with my job while working from home" received a neutral or no response from 30.3% of academic staff members. Furthermore, 47.4% of respondents agree with the statement that "work-related fatigue makes me depressed and discourages me from doing work." While just 45.2% of academic staff members think that "working from home improves my job performance," 43.9% of academic staff agree with the following statement: "I feel motivated to work if my employers and peers value my work." Subsequently, 30.7% of respondents responded neutrally, while 22.4% expressed strong agreement and 3.1% indicated disagreement. Additionally, almost half (46.9%) agreed that working from home allowed them to accomplish many daily chores. Hence, a mere 36.4% of the academic personnel concurred with the statement, "I perceive my occupation as rather disagreeable." This assertion aligns with previous research undertaken by Roza(2020), which found that a significant majority of respondents (87%) expressed dissatisfaction with their work during the COVID-19 epidemic.

Table 4: Productivity of Academic Staff

Statement	Frequency	Percentage (%)
Most days I am passionate about my work when I work from home.		
Strongly Disagree	2	.9
Disagree	33	14.5
Neutral	108	47.4
Agree	77	33.8
Strongly agree	8	3.5

Table 4 (continues)

Statement	Frequency	Percentage (%)
I feel quite satisfied with my job while working from home.		
Strongly Disagree	1	.4
Disagree	28	12.3
Neutral	69	30.3
Agree	123	53.9
Strongly agree	7	3.1
Fatigue from work makes me depressed and discourages me from doing work.		
Disagree	23	10.1
Neutral	71	31.1
Agree	108	47.4
Strongly Agree	26	11.4
I have trouble sleeping because of a disturbance/pain in my muscles or joints.		
Strongly Disagree	1	.4
Disagree	18	7.9
Neutral	58	25.4
Agree	120	52.6
Strongly agree	31	13.6
I find my job rather unpleasant.		
Strongly Disagree	13	5.7
Disagree	57	25.0
Neutral	58	25.4
Agree	83	36.4
Strongly agree	17	7.5
Working from home improves my job performance.		
Strongly Disagree	2	.9
Disagree	35	15.4
Neutral	17	7.5
Agree	71	31.1
Strongly agree	103	45.2
Working from home allows me to complete tasks within the specified time.		
Strongly Disagree	6	2.6
Disagree	41	18.0
Neutral	64	28.1
Agree	101	44.3
Strongly agree	16	7.0

Table 4 (continues)

Statement	Frequency	Percentage (%)
I feel motivated to work if the work I do is appreciated by employers and colleagues.		
Disagree	7	3.1
Neutral	70	30.7
Agree	100	43.9
Strongly Agree	51	22.4
My work-family relationship is balanced.		
Disagree	4	1.8
Neutral	56	24.6
Agree	101	44.3
Strongly Agree	67	29.4
I can complete many tasks each day while working from home.		
Strongly Disagree		
Disagree	9	3.9
Neutral	16	7.0
Agree	87	38.2
Strongly agree	107	46.9
I find working from home difficult for me.		
Strongly Disagree	8	3.5
Disagree	80	35.1
Neutral	73	32.0
Agree	59	25.9
Strongly agree	8	3.5
I feel tired more quickly working from home than working in the office.		
Strongly Disagree	7	3.1
Disagree	37	16.2
Neutral	78	34.2
Agree	90	39.5
Strongly agree	16	7.0
I will receive advance notice 2 or 3 days before a meeting or function to make preparations.		
Strongly Disagree	6	2.6
Disagree	18	7.9
Neutral	106	46.5
Agree	82	36.0
Strongly agree	16	7.0

Table 4 (continues)

Statement	Frequency	Percentage (%)
My colleagues are often helpful when I need any work-related help.		
Strongly Disagree	5	2.2
Disagree	27	11.8
Neutral	101	44.3
Agree	68	29.8
Strongly agree	27	11.8
The quality of my work improves when working from home rather than in the office.		
Strongly Disagree	7	3.1
Disagree	44	19.3
Neutral	97	42.5
Agree	66	28.9
Strongly agree	14	6.1
I can feel a significant change in terms of the quality of work when working from home.		
Strongly Disagree	22	9.6
Disagree	38	16.7
Neutral	78	34.2
Agree	69	30.3
Strongly agree	21	9.2
My employer will reprimand me if I make a mistake on the job.		
Strongly Disagree	3	1.3
Disagree	8	3.5
Neutral	93	40.8
Agree	98	43.0
Strongly agree	26	11.4

*N=228

Discussion

Based on the analysis findings, it was determined that a significant proportion of the academic staff falls between the age range of 41 to 50 years. Furthermore, the data revealed that 63.2% of the academic staff identified as female, while the remaining 36.8% identified as male. The study by Galanti et al. (2021) revealed some patterns in the findings. Specifically, it was seen that 71.3% of the participants were women, while 28.7% were men. Additionally, the average age of the participants was determined to be 49.81 years. According to the study conducted by Colley and Williamson (2020), female individuals who engaged in remote work throughout the pandemic showed an enhanced ability to effectively balance their work and family obligations, resulting in increased productivity. Additional research is required to investigate the impact of age on the work-from-home (WFH) experience, Specifically,

it focuses on the elderly population, who may be less familiar with remote technologies than their younger counterparts.

Moreover, an investigation was conducted by administering questionnaires to academic staff members, revealing that their wages range from RM4,851 to RM10,970, with an average of 59.2 percent. The findings align with previous studies conducted by the Pew Research Centre, which have observed that older employees experienced less difficulty adapting to remote work during the pandemic than their younger counterparts. Additionally, individuals with lower income levels encountered more significant financial distress than those with higher incomes (Keeter, 2020). Out of the 204 married academic staff, it is observed that 9.6 percent of their spouses are engaged in domestic duties as housewives. In contrast, the remaining spouses pursue their professional activities. Out of the entire academic staff, 89.9% of them have children. On average, each academic staff member possesses two children, accounting for 30.3% of the children. The minimum age observed in the sample is one year, while the maximum age recorded is 29 years. Following the research conducted by Sovya Melati et al. (2022), the phenomenon of remote work has resulted in parents assuming additional responsibilities and duties, specifically as educators inside their households, providing guidance to their children in completing school assignments. Parental aid, particularly from mothers, is crucial for school-age children when engaging in academic tasks. Research indicates that those who have children are more prone to experiencing work-family conflict compared to those who do not have children. In addition, younger children are likely to seek additional time and attention from their parents. This phenomenon can be attributed to the increased demand for parental attention and time among younger children.

In addition, a significant proportion of academic personnel allocate five days per week to participate in meetings and workshops. Xin's (2020) study reveals that a significant number of respondents engage in remote work with a frequency of 5-6 days per week, indicating notable parallels. Subsequently, the analysis of the marital status of the academic personnel reveals that 9.2 percent remain unmarried, although the majority, amounting to 89.5 percent, are married. The remaining percentages are occupied by divorced individuals (0.9%) and widowed (0.4%), respectively. According to a study conducted by Nidhi et al. (2021), it was observed that a significant proportion of married women who were employed expressed dissatisfaction with their work-life balance during the pandemic. This dissatisfaction can potentially negatively impact their physical well-being, psychological well-being, and social connections. Therefore, it is imperative to assist married women employed during this challenging period and exhibit greater sensitivity towards their requirements.

Furthermore, the outcome pertaining to the location of academic staff deployment is 100% concentrated within urban areas. The predominant reason for the bulk of Universiti Putra Malaysia's staff being from the city of Serdang is the university's

geographical positioning within the said city. Out of the total respondents in the city, 87.3% are homeowners, while the remaining 12.7% reside in leased accommodations. The overwhelming majority of academic personnel, precisely 99.1%, utilize private automobiles as their primary mode of transportation for commuting to their workplace. This phenomenon can be attributed to the extended tenure of the majority of UPM.

Workers, resulting in a steady salary that enables them to afford personal vehicles. The respondents to the questionnaire consist exclusively of full-time academic staff members, a majority of whom have been employed at UPM for 5-10 years, accounting for 51.3% of the total. Based on Gultom's (2021) findings, the majority of respondents (71.70%) reported work experience ranging from 6 to 10 years. This indicates that these individuals possess a substantial level of expertise, competence, and knowledge necessary for effectively fulfilling their job responsibilities.

Based on the analysis findings, it was determined that a significant proportion of the academic personnel falls between the age range of 41 to 50 years. Furthermore, the data revealed that 63.2% of the academic staff identified as female, while the remaining 36.8% identified as male. The study conducted by Galanti et al. (2021) revealed many parallels in its findings. Specifically, the study observed 71.3% of the participants were women, while 28.7% were men. Additionally, the average age of the participants was determined to be 49.81 years. According to the study conducted by Colley and Williamson (2020), it was observed that women who engaged in remote work arrangements within the pandemic exhibited enhanced integration of work and family duties, leading to increased levels of productivity. Additional research is required to investigate the impact of age on the work-from-home (WFH) experience, specifically among older individuals who may possess less familiarity with remote technologies compared to their younger counterparts.

Moreover, an investigation was conducted by administering questionnaires to academic personnel, revealing that their wages range from RM4,851 to RM10,970, accounting for 59.2 percent of the total. As mentioned earlier, the findings align with recent reports published by the Pew Research Centre, which indicate that older workers experienced a comparatively smoother transition to remote work during the pandemic compared to younger workers. Additionally, individuals with lower income levels encountered more significant financial distress than their higher-earning counterparts (Keeter, 2020). Out of the 204 married academic staff, it is observed that 9.6 percent of their spouses are engaged in domestic duties as housewives. In contrast, the remaining spouses pursue their own professional activities. Out of the entire academic staff, 89.9% had children, with an average of two children per individual, accounting for 30.3% of the total. The minimum age observed in the sample is 1 year, while the maximum age recorded is 29 years. According to the findings of Sovya Melati et al. (2022), remote work has resulted in parents assuming

additional responsibilities and duties, specifically as educators inside their households, providing guidance to their children in completing school assignments. Parental aid, particularly from mothers, is crucial for school-age children when engaging in academic tasks. Parents who have children are more prone to experiencing work-family conflict compared to individuals who do not have children. Moreover, younger children will likely seek additional time and attention from their parents. This phenomenon can be attributed to the higher demand for parental attention and time among younger children.

Furthermore, a significant proportion of academic personnel allocate five days per week to participate in meetings and workshops. Xin's (2022) study reveals that a significant number of participants reported engaging in remote work with a frequency of 5-6 days per week. Subsequently, the analysis of the marital status of the academic.

Personnel reveals that 9.2% remain unmarried, although the majority, comprising 89.5%, are married. According to a study conducted by Nidhi et al. (2021), a significant proportion of employed married women expressed dissatisfaction with their work-life balance during the pandemic. This dissatisfaction can negatively impact their physical, mental, and social well-being. Therefore, it is imperative to assist married women employed at this period of heightened stress and to exhibit greater sensitivity towards their requirements.

Furthermore, the outcome of the location of academic staff deployment indicates a complete concentration of 100% inside urban areas. The predominant reason most workers at Universiti Putra Malaysia hail from the city of Serdang is the institution's geographical placement within the city, as mentioned earlier. Out of the total respondents in the city, a significant majority of 87.3% reported owning their own houses, while a minority of 12.7% indicated residing in leased accommodations. The overwhelming majority of academic personnel, accounting for 99.1%, utilize private automobiles as their primary mode of transportation for commuting to their workplace. This phenomenon can be attributed to the extended tenure of most UPM workers, resulting in a reliable source of income that enables them to afford personal vehicles. The respondents to the questionnaire consist exclusively of full-time academic staff members, a significant proportion of whom have accumulated 5-10 years of service at UPM, or 51.3% of the total. Based on Gultom's (2021) findings, most respondents (71.70%) reported work experience ranging from 6 to 10 years. This indicates that these individuals possess the expertise, competence, and knowledge to fulfill their job responsibilities effectively.

Working environment

The work environment assumes a crucial role in determining employment productivity and performance, with the perception that working from home offers greater comfort

than working in a traditional office setting. Based on the findings about the working environment, a significant proportion of academic staff, precisely 32.5%, agreed that they experience discomfort in their workspace while working from home, resulting in physical soreness in some body regions. According to Xiao et al. (2020), heightened stress levels resulting from sharing workspaces, inadequate body mechanics caused by the absence of appropriate physical workstations, and prolonged periods of sedentary behavior can all contribute to heightened levels of discomfort and pain. Subsequently, the survey results indicate that 29.4% provided neutral responses, 18.0% expressed strong disagreement, 14.5% expressed disagreement, and 5.7% severely disagreed.

Subsequently, the results indicate that 32.0% responded with agreement, 25.9% responded with strong agreement, 23.7% responded with neutrality, 11.4% responded with disagreement, and 7.0% with strong disagreement to the statement "I experience a sense of disturbance due to environmental factors (such as interference from children or family members) while working from home." This is consistent with the findings of Eddleston and Mulki (2017) and Mohammed et al. (2022), who argue that integrating work and family responsibilities within a single physical environment can potentially heighten individuals' stress levels. This is attributed to the growing disruptions that may occur as individuals struggle to determine which duty to prioritize their family or their work. Role confusion can harm various aspects of individuals' work experiences. These effects include increased absenteeism rates, decreased job satisfaction and performance levels, heightened occupational stress, and elevated turnover rates (Mohammed et al., 2022). The presence of distractions has been found to have a substantial adverse effect on an individual's level of productivity in the workplace. Distracting factors encompass several features, such as the choice to partake in non-work-related activities during designated working hours, unanticipated visitors, use of smartphones, engagement with social media platforms, and urgent familial concerns. Multitasking is a significant obstacle for individuals engaged in remote work, particularly in the context of the ongoing Covid-19 pandemic. A significant number of employees are faced with the responsibility of independently providing care for both their children and elderly family members within their households. The presence of young children or family members in the home environment may serve as a potential source of distraction for employees (Baruch, 2020; Kazekami, 2020; Vyas & Butakhieo, 2020).

In addition, a significant proportion of academic personnel agreed that they experience a sense of disruption when they are required to share their workspace with family members, including spouses and children. According to the data provided, 30% of the respondents strongly agreed with the statement. Conversely, 14.9% of the sample indicated a disagreement. Additionally, 13.6% of the sample expressed a neutral stance, while 1.3% of the sample strongly disagreed with the statement. In addition, regarding the statement "During the Movement Control Order (MCO), I

experience time pressure in my work," a significant proportion of academic staff, precisely 43.4%, highly agree with the statement. Furthermore, 25.4% agree, 18.9% remain neutral, and 3.5% severely disagree. This statement is consistent with the findings of Brougham et al. (2019) and Mohammed et al. (2022), which suggest that employees may experience concerns regarding job security due to the growing prevalence of digitalization in the workplace. Consequently, these apprehensions can contribute to heightened stress levels and diminished career satisfaction.

The survey results indicate that most participants, precisely 40.8%, agreed with the statement, "Normally, postures such as sitting and crossing legs become my routine when using a laptop or computer." Furthermore, 24.1% strongly agreed with the statement. According to McQuaid (2019) and Iskandar (2021), it has been argued that sitting for extended periods can enhance the inclination to engage in prolonged computer work, potentially contributing to health complications. According to the survey results, most respondents, precisely 43.4% of the total sample, strongly agreed that they experienced time-related pressure while working during the Movement Control Order (MCO) period. According to Prasetyaningtyas et al. (2021), it has been shown that working from home (WFH) can impose additional stress on individuals as they attempt to manage both professional and domestic responsibilities. Consequently, this can result in a diminished sense of work-life balance among employees. Thorstensson (2020) and Prasetyaningtyas et al. (2021) have a common perspective in their research, which focuses on the impact of Covid-19-specific characteristics on work-life balance (WLB) among individuals who work from home (WFH).

Furthermore, regarding the assertion "I experience a sense of ease when performing office tasks in a dimly lit setting," the data reveals that out of the total respondents, 35.5% strongly disagreed, and 15.4% highly agreed. Subsequently, the data reveals that 21.5% of the sample strongly disagreed with the statement, "I engage in office work until late at night." Additionally, 36.0% of the academic staff agree that properly arranging tables and chairs affects how well they do their jobs. According to Sehgal (2012) and Al-Omari & Okasheh (2017), a crucial consideration is the ergonomic quality of office furniture. Ergonomic office furniture ensures optimal compatibility between workers and their surrounding elements, such as chairs, workstations, PC configurations, and environmental conditions. If an employee has discomfort for any reason, it is likely to have a negative impact on their work performance. The majority of academic staff responded neutrally to the assertion that "the room temperature is too cold, causing discomfort in my joints and muscles while working." This finding is consistent with the research conducted by Al-Omari and Okasheh (2017), which suggests that the temperature component does not significantly affect employees' job performance and may, therefore, be disregarded. According to Sehgal (2012) and further supported by Al-Omari and Okasheh (2017), the optimal temperature for maximizing production is contingent upon an individual's physiological characteristics.

The effects of temperature are multifaceted and pose challenges in terms of comprehension.

Health status

According to Lerner et al. (2019), increased sedentary work and other possible characteristics of individual health and well-being should be considered when discussing WFH. Significantly, there is a persistent association between worker health and productivity, whereby the presence of health difficulties reported by workers is inversely related to their production levels. According to the findings, talk about the respondents' health. In response to the question "Do you feel in a good health condition," 2.2% answered strongly disagree, 1.8% answered disagree, and 49.1% answered strongly agree. Subsequently, a mere 7.5% of the respondents expressed a strong disagreement. In comparison, 11.0% of the respondents indicated a strong agreement in response to the query, "In the event that I am unwell, I still engage in academic work as a faculty member." Xiao (2021) posits that an acute sickness, such as the common cold or influenza, can potentially diminish an individual's capacity to engage in work-related activities, impacting labor productivity. Other than that, in response to the query, "I used to experience depression caused by working from home at an office job," A total of 25.9% of respondents expressed a strong disagreement, while 25.0% indicated a disagreement, and 5.3% expressed a firm agreement.

Additionally, the respondents stated that 42.1% agree and 10.5% strongly agree with the statement that "during the last 12 months, I have experienced health problems in my eyes, neck, and hands due to working from home". Next, 45.2% of respondents agreed with the statement, and 14.9% strongly agreed. I experience a health issue, such as back pain, while working from home. According to a recent study conducted in Japan, many employee illnesses can be attributed to various symptoms, such as stiff necks or shoulders, exhaustion, sadness or anxiety, and dry eye problems (Xiao, 2021). In response to the inquiry "Does your work contribute to the development of musculoskeletal disorders (MSDs) in any anatomical region?", 13.6% of participants expressed strong agreement. Xiao (2021) asserts that musculoskeletal disorders, characterized by aching necks or stiff shoulders, as well as back discomfort, alongside psychological ailments such as insomnia and anxiety, represent the predominant and significant health concerns impacting workers' productivity. Subsequently, a notable proportion of respondents, precisely 38.6%, agreed. In comparison, 25.0% indicated a strong agreement in response to the query about the sensation of ocular discomfort resulting from using a computer or laptop in close proximity to the eyes. According to the data provided, 42.5% of respondents agreed with the statement, "My regular employment has an impact on my health, but I am still able to fulfill all necessary responsibilities." Additionally, 12.7% of participants strongly agreed with this statement.

Productivity academic staff

Productivity refers to the relationship between a system's outputs and the inputs required to produce those outputs. (Saputra et al., 2021) have been cited in the present study. In this research, WFH productivity explains how office workers are more productive during WFH than when they typically work from the office. Statistics have started to fall since 2020, according to CEIC's analysis for 2022. In June 2020, Malaysia experienced a significant decline in labor productivity, reaching an unprecedented low of -16.14 percent.

According to the findings, a significant proportion of academic employees (47.4%) responded neutrally to the statement, "Most days I experience a sense of passion for my work when working remotely." Most academic staff members, 53.9%, agree with the following statement: "I feel quite satisfied with my job while working from home." Following this, 30.3% gave indifferent responses, while only 0.4% gave strongly disagreeing responses. According to Cano (2020), it is argued that implementing suitable work-from-home (WFH) arrangements can enhance worker time flexibility, performance, and production. In addition, a total of 108 individuals, accounting for 47.4 percent of the respondents, agreed with the assertion that work-related exhaustion leads to feelings of depression and discouragement, hence impeding their productivity. Xiao (2021) posits that in cases where workers experience sleep deprivation, the confluence of weariness and sleepiness may exacerbate their overall health status and productivity in the workplace. In addition, it is noteworthy that 45.2% of the academic staff agreed that "engaging in remote work enhances my job performance." In a recent study conducted by Fonner and Roloff (2010) within the banking industry, it was discovered that implementing the work-from-home (WFH) concept has resulted in an increased perception of freedom and adaptability among workers. This perception has subsequently led to greater recognition, career development, and personal improvement (Lee et al., 2017; Weiss et al., 2018). Regarding the assertion, "Engaging in remote work enables me to accomplish tasks within the designated timeframe," 101 individuals (equivalent to 44.3%) agreed with this statement. According to Purwanto et al. (2020), working from home (WFH) has the potential to provide employees with the advantage of flexible scheduling, allowing them to manage their time effectively and finish their tasks. Additionally, WFH can also result in cost savings for employees by eliminating the need to commute to the workplace (Vyas & Butakhieo, 2020). Furthermore, it is worth noting that a significant proportion of academic employees, precisely 43.9%, express agreement with the statement "I experience a sense of motivation in my work when I receive recognition and appreciation from both employers and colleagues." This assertion is supported by the findings of Sovya Melati et al. (2022), who observed that amidst the Covid-19 pandemic, female employees experienced a sense of validation when they performed their duties competently, derived satisfaction from their employment, felt secure in their work environment, perceived genuine concern from their employers, recognized

the positive impact of work on their physical well-being, received satisfactory remuneration, believed that their skills and abilities were valued in the workplace, maintained effective communication with their superiors, and maintained a sense of comfort in their professional roles.

In addition, it was found that 44.3% of academic staff responded affirmatively to the statement, "My work-family relationship is balanced." Thorstensson (2020) posits that implementing remote work arrangements affords employees greater autonomy over their work schedules, enabling them to allocate more time to familial obligations. This reduction in work-life conflicts subsequently engenders heightened levels of job satisfaction, ultimately fostering increased employee productivity. According to Grant et al. (2019) and Purwanto et al. (2020), it has been observed that working from home (WFH) influences both flexibility and job engagement. This is because WFH allows employees to have a more flexible schedule for completing their tasks without the need to adhere strictly to traditional office hours.

Additionally, it is worth noting that 36.4% of academic employees concur with the assertion that their job is somewhat disagreeable. Preliminary data from Roza's (2020) study support this assertion by showing that a sizable portion of participants, precisely 87 percent, expressed dissatisfaction with their employment situations during the Covid-19 pandemic. There are several factors contributing to this phenomenon, including insufficient rest (11.5%), disrupted work patterns (19.2%), challenges in doing tasks (23.1%), loss of concentration on work (23.1%), and increased workload (3.8%). The study reveals that there are certain limitations associated with the use of technology. Specifically, there is a decrease in face-to-face social interaction, accounting for around 7.8% of the overall limitations. Additionally, the effectiveness of work conducted through technology is compromised, constituting approximately 11.5% of the limitations identified.

Conclusion and Recommendation

This study offers an initial viewpoint of academic employees WFH during the Covid-19 pandemic. This phenomenon is because WFH provides employees with increased flexibility in managing their work schedules. Consequently, they can allocate more time to their families, reducing conflicts between work and personal life. This, in turn, leads to heightened job satisfaction, ultimately enhancing overall productivity. Conversely, the factor may diminish their productivity level when juggling professional responsibilities, domestic duties, familial demands, and the care of young children becomes overwhelming. The employees are also affected by working in a comfortable home environment. If individuals perceive their homes solely as a space for relaxation and engage in non-work-related pursuits such as household chores, watching films, playing computer games, utilizing mobile devices, furthermore, dedicating time to social media will diminish their productivity level. The remote work arrangement can

exert beneficial and adverse effects on individual employees, their affiliated organizations, and the broader societal context. The option of working remotely may not be universally suitable due to individual circumstances, such as the presence of young children who may lack an understanding of boundaries and consequently cause disturbances during the workday. Nevertheless, working remotely can provide employees with an enhanced work-life equilibrium. This phenomenon holds significant importance as more parental involvement in their children's lives correlates positively with enhanced academic performance and improved behavioral outcomes. Additionally, it allows parents to effectively manage and harmonize their professional commitments and personal pursuits, resulting in a sense of fulfillment and achievement. Contented parents exhibit increased productivity in their professional endeavors, while contented children are likelier to emerge as trailblazers, exemplars of achievement, and influential figures in the forthcoming generation.

Nevertheless, this study is intended to serve as a valuable resource for individuals across many sectors who have engaged in remote work amidst the Covid-19 pandemic. It is imperative for consumers to adopt an ergonomic approach in their work environment to uphold personal well-being, which in turn can lead to enhanced productivity. Furthermore, this study serves as a valuable resource for the Malaysian government and organizations that have implemented remote work policies for their employees. It is imperative for the government to establish a work environment that is conducive to optimal performance by placing significant emphasis on job quality and productivity. The consideration of these issues holds significant importance for both governmental entities and corporations in their efforts to enhance the overall welfare of their workforce.

Furthermore, future research endeavors are recommended to encompass a more diverse population to get a broader range of opinions. In order to comprehensively analyze technological advancement, it is imperative to incorporate additional models, elements, and theories as independent variables for future examination.

Reference

- Al Omari, K., Okasheh, H. (2017). The Influence of Work Environment on Job Performance: A Case Study of Engineering Company in Jordan. *International Journal of Applied Engineering Research* ISSN 0973-4562 12(24).
- Bihani, P., & Patil, S. T. (2014). A comparative study of data analysis techniques. *International Journal of Emerging Trends and Technology in Computer Science*, 3(2), 95-101.

- Brougham, D., & Haar, J. (2020). Technological disruption and employment: The influence on job insecurity and turnover intentions: A multi-country study. *Technological Forecasting and Social Change*, p. 161, 120276.
- Colley, L., & Williamson, S. (2020). Working during the Pandemic: From resistance to revolution?
- Eddleston, K. A., & Mulki, J. (2017). Toward understanding remote workers' management of work–family boundaries: The complexity of workplace embeddedness. *Group & Organization Management*, 42(3), 346–387.
- Fonner, K. L., & Roloff, M. E. (2010). Why teleworkers are more satisfied with their jobs than are office-based workers: When less contact is beneficial. *Journal of Applied Communication Research*, 38(4), 336-361.
- Galanti, T., Guidetti, G., Mazzei, E., Zappalà, S., & Toscano, F. (2021). Work from home during the Covid-19 Outbreak. *Journal of Occupational & Environmental Medicine*, 63(7).
- Grant, C. A., Wallace, L. M., Spurgeon, P. C., Tramontano, C., & Charalampous, M. (2019). Construction and initial validation of the E-Work Life Scale to measure remote e-working. *Employee Relations*, 41(1), 16-33. <https://doi.org/10.1097/jom.0000000000002236>
- Gultom, E. (2021). The effect of working from home on the productivity of female lecturers during Covid-19 pandemic at rivate universitiesi in Indonesia. *International Journal of Business and Social Science*, p. 1.
- International Ergonomics Association (IEA). Retrieved Feb. 12, 2003, from <http://www.iea.cc/ergonomics/>.
- Iskandar, N., Ganesan, N., & Maulana, N. S. E. A. (2021). Students' perception towards the usage of online assessment in University Putra Malaysia amidst Covid-19 pandemic. *Journal of Research in Humanities and Social Science*, 9(2), 9-16.
- Keeter SCOTT (2020). People financially affected by Covid-19 outbreak are experiencing more psychological distress than others.
- Kazekami, S. (2020). Mechanisms to improve labor productivity by performing telework. *Telecommunications Policy*, 44(2), 101868.

- Lerner, R. M., Miller, J. R., Knott, J. H., Corey, K. E., Bynum, T. S., Hooper, L. C., & Terry, P. A. (2019). Integrating scholarship and outreach in human development research, policy, and service: A developmental contextual perspective. In *Life-span development and behavior* (pp. 249–274). Routledge.
- Lee, S., McHale, S. M., Crouter, A. C., Hammer, L. B., & Almeida, D. M. (2017). Finding time over time: Longitudinal links between employed mothers' work–family conflict and time profiles. *Journal of Family Psychology*, 31(5), 604.
- McQuaid, C. F., McCreesh, N., Read, J. M., Sumner, T., Houben, R. M., White, R. G., & CMMID Covid-19 Working Group. (2020). The potential impact of Covid-19-related disruption on tuberculosis burden. *European Respiratory Journal*, 56(2).
- Mohammed, Z., Nandwani, D., Saboo, A., Padakannaya, P. (2022). Job satisfaction while working from home during the Covid-19 pandemic: Do subjective work autonomy, work-family conflict, and anxiety related to the pandemic matter? *Cogent Psychology*, 9(1). <https://doi.org/10.1080/23311908.2022.2087278>.
- Makhbul, Z. M., & Idrus, D. (2009). Work stress issues in Malaysia. *Malaysia Labour Review*, 3(2), 13-26.
- Mohd Makhbul, Zafir & Che Senik, Zizah & Abdullah, Nor. (2013). Ergonomics and Stress at the Workplace: Engineering Contributions to Social Sciences. *Jurnal Pengurusan*, 37. 125-131.
- N, R. K., Jain, S., & Bhargava, L. (2022). To study the impact of screen time on it job professionals in India. <https://doi.org/10.21203/rs.3.rs-1833618/v1>.
- Nidhi, K., Nandi, D., Segan, M., Anant Awasthi, A., & Janardhanan, R. (2021). Impact of work from home on married women during Covid-19 induced lockdown. *Journal of Women's Health and Development*, 04(04). <https://doi.org/10.26502/fjwhd.2644-28840070>
- Prasetyaningtyas, S. W., Heryanto, C., Nurfauzi, N. F., & Tanjung, S. B. (2021). The effect of work from home on employee productivity in banking industry. *Jurnal Aplikasi Manajemen*, 19(3), 507–521. <https://doi.org/10.21776/ub.jam.2021.019.03.05>
- Purwanto, A., Asbari, M., Fahlevi, M., Mufid, A., Agistiawati, E., Cahyono, Y., & Suryani, P. (2020). Impact of work from home (WFH) on Indonesian teachers performance during the Covid-19 pandemic: An exploratory study. *International Journal of Advanced Science and Technology*, 29(5), 6235-6244.

- Saputra Nopriadi., Hayat., Ardyansyah Farid., Palupiningtyas Dyah., Khusna Khanifatul., & Karneli Okta. (2021). Work-From-Home Productivity In Indonesia: First Time Experience Of Virtual Working During Covid-19 Time. *Jurnal Masyarakat dan Budaya*, 13(1).
- Sehgal, A., Perelman, V., Kuryla, S., & Schonwalder, J. (2012). Management of resource-constrained devices in the Internet of Things. *IEEE Communications Magazine*, 50(12), 144-149.
- Sekaran, U. (2003). *Research methods for business: A skill building approach*. (4th edition.). John Wiley & Sons Inc.
- Seva, R. R., Tejero, L. M., & Fadrilan-Camacho, V. F. (2021). Barriers and facilitators of productivity while working from home during pandemic. *Journal of Occupational Health*, 63(1). <https://doi.org/10.1002/1348-9585.12242>
- Sovya Melati, M. E., & Rizkillah, R. (2022). Job motivation, work-family conflict, and job satisfaction of formal working mothers during Covid-19 pandemic. *Journal of Child, Family, and Consumer Studies*, 1(2), 81–95. <https://doi.org/10.29244/jcfcs.1.2.81-95>
- Roza, Y. (2020, October). Mathematical Learning Resources Using Android Application for Online Learning during Pandemic Covid-19. In *Journal of Physics: Conference Series* (Vol. 1655, No. 1, p. 012092). IOP Publishing.
- Taherdoost, H. (2019). What is the Best Response Scale for Survey and Questionnaire Design; Review of Different Lengths of Rating Scale / Attitude Scale / Likert Scale. *International Journal of Academic Research in Management*, 8(1), 1-10. <https://papers.ssrn.com/abstract=3588604>
- Thorstensson, Esra. (2020). The Influence of Working from Home on Employees' Productivity Comparative document analysis between the years 2000 and 2019-2020. *Karlstad Business School*.
- World Health Organization, 2. (2020). Clinical management of Covid-19: interim guidance, 27 May 2020 (No. WHO/2019-nCoV/clinical/2020.5). World Health Organization.
- Vinothini P, Radin Umar RZ, Too YW, Halim I. (2018). A future framework for musculoskeletal disorders symptoms among computer office workers. *International Journal Physiotherapy*. 5(6):178053. <https://doi.org/10.15621/ijphy/2018/v5i6/178053>

- Vyas, L., & Butakhieo, N. (2021). The impact of working from home during Covid-19 on work and life domains: an exploratory study on Hong Kong. *Policy design and practice*, 4(1), 59-76.
- Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N. (2020). The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (Covid-19) in January and February 2020 in China. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*, p. 26, e923549-1.
- Xiao, J. (2021). Decoding new normal in education for the post-Covid-19 world: Beyond the digital solution. *Asian Journal of Distance Education*, 16(1), 141–155.
- Xin's, Y., Becerik-Gerber, B., Lucas, G., & Roll, S. C. (2020). Impacts of working from home during Covid-19 pandemic on physical and mental well-being of office workstation users. *Journal of Occupational Environmental Medicine*, 63(3), 181–190. <https://doi.org/10.1097/jom.0000000000002097>.
- Yeow, Jian & Ng, Poh Kiat & Lim, Wei. (2021). Workplace ergonomics problems and solutions: Working from home. *F1000 Research*. 10. 1025. 10.12688/f1000research.73069.1.