JISS Jurnal Indonesia Sosial Sains

Vol. 7, No. 1, 2026
E-ISSN:2723 – 6692
P-ISSN:2723– 6595
http://jiss.publikasiindonesia.id/

Risk Factors for Work Fatigue in Butler Workers in the Tourism Industry in Bali Province in 2024

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KEYWORDS
Work fatigue; Butler workers; Tourism industry; Occupational health; Risk factors; Workload; Bali Province; Hospitality industry; Occupational safety

ABSTRACT
Work fatigue is a significant occupational health concern in the tourism industry, particularly affecting butler workers in luxury hotels, villas, and resorts. This study examined the risk factors associated with work fatigue among butler workers in Bali Province's tourism industry in 2024. The research aimed to identify and analyze various factors contributing to work fatigue, including workload demands, working hours, physical work environment conditions, and individual worker characteristics. Butler workers face unique occupational challenges due to high service standards, extended working hours, and the pressure to maintain guest satisfaction in luxury hospitality settings. The study employed a cross-sectional design to assess the relationship between various risk factors and the level of work fatigue experienced by butler workers. Findings revealed that work fatigue among butler workers was significantly influenced by multiple factors, including excessive workload, prolonged working hours, physical work environment conditions, and inadequate rest periods. The high prevalence of work fatigue among these workers poses serious implications for both worker safety and service quality. This research contributes to the understanding of occupational health issues in Bali's tourism sector and emphasizes the need for improved *keselamatan dan kesehatan kerja* (*K3*) management systems in hospitality establishments. The findings underscore the importance of implementing fatigue management strategies and regulatory compliance to protect worker well-being while maintaining the quality standards expected in the luxury tourism industry.

INTRODUCTION

Work fatigue is a global occupational health challenge that affects workers across various industries, with particularly significant impacts in service-intensive sectors. According to the International Labour Organization (*ILO*, 2016), workplace stress and fatigue represent collective challenges that reduce productivity, increase accident rates, and compromise worker well-being. The World Health Organization (*WHO*) recognizes occupational fatigue as a critical risk factor contributing to approximately 2.78 million work-related deaths annually. In the hospitality and tourism industry specifically, work fatigue has been identified as a prevalent concern due to demanding service standards, irregular working hours, and high physical and psychological workloads.

The burden of work fatigue in the service industry is substantial. International studies indicate that workers in hotels, restaurants, and tourism services experience higher rates of occupational fatigue compared to other sectors, with prevalence rates ranging from 30% to 75% depending on job roles and working conditions. This phenomenon is particularly pronounced

in luxury hospitality settings where service excellence demands create intense pressure on frontline workers. Research from various countries demonstrates that hospitality workers frequently report symptoms including physical exhaustion, reduced concentration, musculoskeletal complaints, and sleep disturbances—all of which compromise both worker safety and service quality.

In Indonesia, the national occupational safety and health profile reveals concerning trends regarding work-related fatigue. *Occupational Safety and Health (K3)* is an activity that guarantees and protects the safety and health of the workforce by striving to prevent work accidents and occupational diseases, as mentioned in Government Regulation No. 50 of 2012 concerning the Implementation of the *Occupational Safety and Health Management System (SMK3)*. The implementation of *K3* aims to protect workers from *Occupational Accidents (KK)* and *Occupational Diseases (PAK)*, as well as other diseases or health disorders in workers and other people in the workplace, including ensuring that the production process can run efficiently and productively (*Kemnaker*, 2022).

According to data from the Directorate General of Manpower Supervision Development in 2022, there were 7,298 work accidents in 2021 affecting 9,224 workers, with 9% of these incidents directly attributed to fatigue factors (*Kemnaker*, 2022). This statistic underscores the critical need for comprehensive fatigue management strategies, particularly in high-risk sectors such as tourism and hospitality where workers face unique occupational demands.

Work-related fatigue often increases the risk of workplace accidents and usually occurs among most workers. Work fatigue can result in reduced worker capacity and endurance, so it can cause mistakes in doing work, as well as loss of concentration. Fatigue that often occurs affects worker safety and increases the level of errors that will occur, thereby increasing the ratio of work accidents (*Hidayat*, 2021). According to data from the Directorate General of Manpower Supervision Development in 2022, in 2021 there were 7,298 work accidents affecting a total of 9,224 workers, with 9% of the total caused by fatigue factors (*Kemnaker*, 2022).

Multiple risk factors contribute to the development of work fatigue in occupational settings. These factors can be categorized into three main domains: individual characteristics (age, gender, health status, sleep quality, lifestyle); work design factors (workload, working hours, work schedule, shift patterns, work posture); and environmental conditions (temperature, noise, lighting, humidity). The factors that cause fatigue in the industry vary widely. For example, the work environment can affect worker performance; noise, hot work climate, poor lighting, and vibration can result in discomfort at work. If workers operate in uncomfortable conditions, it will eventually cause fatigue. Apart from the physical factors of the work environment, some of the main factors that are significant to fatigue include gender, age, nutritional status, body size of the worker concerned, time spent at work, and workload (*Gaol et al.*, 2018). Workload is a process or activity that must be completed immediately by a worker within a certain period of time. If a worker is able to complete and adjust to a number of tasks given, then it does not become a workload. However, if the worker is not successful, then these tasks and activities become a workload (*Vanchapo*, 2020).

The tourism industry sector is one of the sectors that has a fairly important role in economic development in Indonesia, where this sector can encourage growth in other sectors, such as the trade, transportation, and accommodation and food and beverage sectors. Bali is one

of the largest tourist destinations in Indonesia, and it has wealth and natural beauty as well as cultural uniqueness that are its main attractions. Even Bali is not only famous domestically, but also abroad, where most foreign tourists will mention the name Bali when asked about tourist areas in Indonesia. Bali's economic structure has shifted from its focus in the primary sector to the tertiary sector, namely the tourism sector. As one of the main gateways of tourism that has become a tourism icon in Indonesia, Bali contributes a large amount of tourist visits, which is 39.1% or equal to 6.3 million out of 16 million nationally, and accounts for 41% of the country's foreign exchange earnings. Tourism is the backbone of Bali's economy because it accommodates more than 1.2 million workers. Of course, the workforce in Bali does not only come from Bali, but also from various provinces in Indonesia (*Yakup*, 2019; *Soritua*, 2017; *Independent*, 2022).

Occupational safety and health are important things to pay attention to in any industry, including the tourism industry. In the world of tourism, many tourism activities are offered by business people, in this case tourists who come and the tourism industry that offers tourist activities. So these business actors or businesses must be serious in paying attention to the safety of the types of tourism they offer because it is related to occupational safety and health both from the workers and also from the tourists themselves and other parties as the person in charge of tourism activities. Therefore, a tourism activity built by the private sector or the government must apply standardized procedures for occupational health and safety that have been recognized, and also tourists must be really careful in determining what type of tourism activity is safe to do (*Maharani*, 2022).

Previous research has documented significant occupational health concerns in the hospitality sector, with particularly high rates of work fatigue among hotel workers. A study by *Resayana* (cited in *Belly*, 2018) found that 75.7% of hotel workers experienced relatively high work fatigue, with the majority of affected workers employed in the *Food and Beverage Department* reporting complaints of aches and pains in their hands and feet. Research has also shown that the hotel business carries substantial risks for occupational accidents and occupational diseases. Work accidents are closely related to equipment, particularly electrical systems that increase fire risk, while work-related diseases are often linked to fatigue factors. The *ILO* (2013) emphasizes that these occupational risks impose significant human, social, and economic costs on companies, necessitating serious attention to workplace safety and health management (*Belly*, 2018).

Butler workers represent a specialized occupational group within the luxury hospitality sector that faces unique and intensive work demands. Hotels, villas, and resorts are included in one of the business fields in the service provider industry group or better known as the *Hospitality Industry*. Of course, this business field is a workplace for tourism industry workers where one of the characteristics is that the workers will work for a long time and are required to work quickly and work under pressure (*Son*, 2020). Butlers serve in luxury hotels, villas, and resorts, providing personalized, high-standard service to guests. Unlike general hospitality staff, butlers must possess multidisciplinary competencies encompassing three critical areas: *front office* operations, *housekeeping* services, and *food & beverage* management. Their responsibilities extend from welcoming guests at arrival to ensuring satisfaction throughout the entire stay, often providing 24-hour availability for guest needs.

Preliminary interviews conducted with butler workers in Bali Province revealed significant work-related concerns. Based on the results of interviews that have been conducted with several butler workers in the province of Bali, it is stated that there are demands related to the speed of work and workload given to workers, one of which is the *butler apartment*. *Butler* itself is one of the parts of the job in a hotel, villa, or resort that plays an important role in terms of guest satisfaction. Usually, only luxury hotels, villas, or resorts where guests will be specially served by a *butler* who usually have three important tasks in it, namely *front office*, *house-keeping*, and *food & beverage*.

Butler workers reported experiencing multiple stressors including excessive workload, pressure for rapid task completion, and extended working hours that frequently exceed standard eight-hour shifts. The work and duties carried out by butler workers are so many, coupled with the fact that the workers also have targets that must be met where each worker is given responsibilities from welcoming guests to providing daily service to guests. In some villas and resorts, there is also a work system with eight-hour work shifts, but it is not uncommon for some workers to exceed these working hours because their work has not been completed. Even the operating system of villas, hotels, and resorts runs for 24 hours. The continuous, non-stop operation of luxury accommodations creates conditions where butler workers are exposed to cumulative fatigue risks that may compromise both their health and their ability to deliver high-quality service.

Despite the documented prevalence of work fatigue in the hospitality industry and the unique occupational demands faced by butler workers, there remains a significant research gap regarding the specific risk factors affecting this specialized workforce in Bali Province. While previous studies have examined work fatigue in general hotel workers and food service employees, no comprehensive investigation has specifically analyzed the multifaceted risk factors contributing to work fatigue among butler workers in Bali's luxury tourism sector. This gap is particularly critical given Bali's prominence as an international tourism destination and the increasing demand for premium butler services in the region.

The urgency of this research is underscored by several factors: (1) the high economic dependence of Bali Province on tourism, making worker health and service quality critically important; (2) the unique and intensive occupational demands placed on butler workers that differ from general hospitality staff; (3) the potential consequences of work fatigue for both worker safety and guest satisfaction in luxury accommodations; and (4) the need for evidence-based interventions to protect worker well-being while maintaining service excellence standards.

The novelty of this research lies in its comprehensive, multi-dimensional examination of work fatigue risk factors specifically among butler workers in Bali's tourism industry. Unlike previous studies that have focused on general hotel staff or single-factor analyses, this research simultaneously investigates individual characteristics (age, gender, medical history, sleep disorders, lifestyle), work design factors (work schedule, working hours, workload, work posture, shift patterns, length of service), and environmental conditions (ambient temperature) as potential contributors to work fatigue. Furthermore, this study employs validated international instruments adapted for the Indonesian context, providing robust and reliable measurements of fatigue and its associated risk factors in this understudied occupational group.

These factors allow workers to be exposed to the dangers of work fatigue that exist in the workplace. Therefore, this research aims to conduct an in-depth analysis of work fatigue factors experienced by butler workers in Bali Province, with the ultimate goal of informing interventions to reduce accident rates and improve occupational health management in the tourism industry.

The tourism industry, particularly within hotels and villas, operates continuously, demanding non-stop service from butler staff who ensure guest safety and comfort. These workers engage in relentless manual duties—from assisting with bookings and handling luggage to extensive housekeeping tasks like cleaning, sweeping, and rearranging items—all of which contribute to significant physical fatigue. This strain is compounded by the pressure to work swiftly due to constant booking demands, as noted in reports from butler workers at *Villa X*, highlighting a need to analyze the risk factors behind their work-related exhaustion.

Therefore, this study aims to analyze the prevalence and risk factors of fatigue among butler workers in Bali's tourism industry during 2024. Specifically, it seeks to examine the prevalence of burnout, depict associated risk factors, explore the relationship between these risks and fatigue, and identify the most influential factors affecting worker fatigue. The findings are expected to provide valuable insights for companies, enabling them to evaluate and improve worker health and safety protocols while enhancing knowledge about fatigue-related health risks.

Furthermore, this research offers academic benefits by serving as a foundation for future student investigations into occupational fatigue across various sectors, including tourism. It will contribute to the body of knowledge in occupational health and safety disciplines, particularly regarding butler staff in Bali, and provide the University of Indonesia with additional reference material for studies on workplace fatigue management. For the researchers themselves, it deepens understanding of worker health issues and solutions within the occupational health and safety framework specific to the tourism industry.

RESEARCH METHOD

This study employed a quantitative descriptive analysis with a cross-sectional design, collecting all variables simultaneously through a survey without intervention. The research was conducted across resorts, villas, and hotels in Bali from March to June 2024. The target population comprised all active butler workers in the province, with a minimum sample size of 100 individuals calculated using the Lemeshow formula, resulting in 100 respondents after rounding. Participants were selected based on specific criteria, including being a butler in Bali with at least one year of service and in good health, while excluding daily workers, those with incomplete questionnaires, or workers in poor health.

Primary data collection involved several standardized instruments: the International Fatigue Research Committee (IFRC) questionnaire for fatigue, the Pittsburgh Sleep Quality Index (PSQI) for sleep disorders, the NASA Task Load Index for workload, and the Cornell Musculoskeletal Discomfort Questionnaires for posture. The process began with observing butler departments, followed by direct interviews and online questionnaires to understand their multifaceted roles, which span Front Office, Housekeeping, and Food & Beverage services, ensuring guest comfort from check-in to check-out.

Once collected, the data underwent thorough checking for completeness and consistency before processing. This involved coding descriptive data into numerical values, tabulating for recap, and entering it into software. A cleaning phase ensured accuracy by removing any data not meeting the inclusion criteria, resulting in a final net dataset ready for analysis in SPSS.

The analysis consisted of three stages. First, descriptive analysis summarized the frequency and distribution of each variable. Second, inferential analysis using the Chi-Square test examined relationships between independent and dependent variables at a 95% confidence level, where a p-value ≤ 0.05 indicated a significant relationship. Finally, multivariable analysis using logistic regression identified the most dominant factors affecting work fatigue, including variables with a p-value < 0.25 from the initial tests to determine their relative influence.

RESULTS AND DISCUSSION

Overview of Research Locations

The island of Bali or better known as the Island of the Gods, is one of the most famous tourism destinations in Indonesia and the world. Located between the islands of Java and Lombok, Bali offers extraordinary natural beauty such as beaches, mountains, terraced rice fields, as well as strong cultural and spiritual richness. As an international tourism hub, Bali attracts millions of tourists every year. Tourism is the main sector in the regional economy and also Indonesia. Its existence as a tourism center also certainly creates various job opportunities in the service sector, especially in the hospitality and hospitality sector. The presence of five-star hotels, luxury villas, and exclusive resorts is driving the development of premium services, one of which is *butler services*.

Butler is a personal service professional who is in charge of providing exclusive and personalized service to guests, especially in star hotels and luxury villas. In Bali, this profession is growing as the demand for private and high-quality services increases. A *butler*'s duties are not only limited to taking care of guests' needs, such as scheduling, serving food, or laundry, but also include good communication, cultural understanding, and skills in handling special requests professionally and efficiently. In Bali, *butlers* are also often asked to get to know the local culture in order to provide an authentic experience for international guests. This profession demands a very high standard of service, a command of a foreign language (especially English), and strong interpersonal skills. Formal and on-the-job training are an important part of the formation of reliable professional *butlers*.

Butlers are not just waiters, they are assistants plus whose main job is to help guests with various personal needs during their stay. They act subtly, anticipatory or anticipate your desires, but still maintain privacy, which means they are present when needed but not intrusive.

There are several descriptions of activities in the field that common butlers do, including:

1. Daily services such as preparing breakfast, cleaning and tidying up the rooms or villas where guests stay.
2. Concierge services or planning such as helping with restaurant reservations, spas, tourist activities, recommending and finding local culinary places to arrange transportation.
3. Personal services such as making a surprise or surprise private dinner, laundry, to helping unpack luggage when guests arrive. Some villas also provide a full-time butler 24 hours for service to guests at any time because there are some urgent things that usually happen such as buying medicine.

4. Other additional roles that usually have special bookings with additional fees such as being a personal driver, acting as a guide, for example contacting guests before arriving and arranging logistics and travel during the tour, to arranging the check-out and baggage process and other administrative matters.

Overview of Work Fatigue and Risk Factors for Work Fatigue

Table 1. Measurement of Work Fatigue Levels

Variable		Frequency	Sig.
Work fatigue	Low	85	75,9
	Medium	25	22,3
	Height	2	1,8

The calculation of the results of the measurement of work fatigue in this study was carried out by looking for the average value of each Dimension, which then the overall average value of the questionnaire for each individual. Grouping of complaint categories *fatigue* using the *cut off mean* 1.79 of all research respondents. By value *Cut off point* >1.79 is in the category of severe fatigue and ≤1.79 is in the category of mild fatigue. Based on the results of measuring fatigue using the SOFI questionnaire on 112 respondents in this study, namely workers *Butler* 85 people (75.9%) felt low fatigue, 25 people (22.3%) experienced moderate fatigue and 2 people (1.8%) felt fatigue.

Overview of Individual Factor Frequency Distribution

Table 2. Frequency Distribution of Individual Factors

Variable		Frequency	Sig.
Age	12-25 years	52	46,4
	26-45 years old	54	48,2
	> 45 years old	6	5,4
Gender	Male	54	48,2
	Women	58	51,8
Medical History	Yes	7	6,3
	No	105	93,8
Sleep Disorders	Yes	59	52,7
	No	53	47,3
Lifestyle	Good	56	50,0
	Bad	56	50,0

Based on the data in table 2, it is stated that the highest proportion *of butler* workers on the island of Bali is found in workers with a medical history of no disease (93.8%), and dominated by workers who have sleep disorders (52.7%), while dominated by female gender (51.8%), and a balanced lifestyle (50%), with the most vulnerable age being 26-45 years old (48.2).

Overview of the Frequency Distribution of Risk Factors for Work Design

Table 3. Frequency Distribution of Work Design Risk Factors

Variable		Frequency	Sig.
Work Schedule	> 40 hours	98	87,5
	< 40 hours	14	12,5
Working Hours	<= 8 hours	73	65,2
	> 8 hours	39	34,8
Workload	Non-burden	1	0,9
	Lightweight	25	22,3
	Medium	86	76,8
Work Posture	Lightweight	42	37,5
	Medium	62	55,4
	Weight	8	7,1
Work Shifts	Morning	84	75,0
	Afternoon	28	25,0

Meanwhile, the variable of the risk factor of the work environment was dominated by the work schedule of workers with the number of hours > 40 hours (87.5), with the most working hours dominated by <= 8 hours (65.2), and the most work shifts in the morning and evening (75%). The workload is still fairly moderate (76.8%), the same as the work posture which is still fairly moderate (55.4%).

The Relationship of Risk Factors for Work Fatigue and the Incidence of Work Fatigue

Based on the results of statistical tests, the variables that were significantly related to work fatigue were the age of the worker (p-value 0.037), work posture (p-value < 0.000), and comfortable temperature (p-value 0.042), because all of them had a p-value < 0.05. Meanwhile, variables that were not significantly related to work fatigue were working hours (p-value 0.119), work schedule (p-value 0.738), gender (p-value 0.367), work shift (p-value 0.329), disease history (p-value 0.072), sleep disorders (p-value 0.153), lifestyle (p-value 0.119), and length of service (p-value 0.307), because all had a p-value > 0.05.

Field observations conducted at several hotels and villas throughout the province of Bali showed that workers Butler in the tourism industry in Bali has a fairly high workload, especially in the High season. During observation, it was found that most butlers work for a duration of 8–12 hours per day with a fairly high intensity of guest service at some point. The work activities observed include handling guest requests directly, delivering goods, coordinating with other departments, preparing rooms, and personal services such as arranging transportation and guest tourism activities. This condition causes workers to often mobilize repeatedly, walk fast, lift light to moderate weights, and maintain an unergonomic posture for a long time.

Figure 1. Personal: Cleaning of guest bedrooms and bathrooms performed by *butlers*

In addition, observations show that work schedules that use a shift system are not always balanced. Some workers work consecutive night shifts that have the potential to disrupt sleep patterns. The dynamic work environment with the demands of excellent service, as well as high expectations from foreign guests, creates additional psychological pressure that has the potential to trigger work stress and accelerate the occurrence of burnout. In some locations, the working temperature in public and outdoor areas tends to be hot (28–32°C), especially workers who have to serve outdoor activities such as pick-up or drop-off. Observations also found that some butlers still have unhealthy lifestyle habits, such as lack of rest, excessive caffeine consumption, and lack of exercise time.

In general, the observation results show that the most visible factors that have the potential to trigger work fatigue in butler workers are unergonomic work postures, high physical and mental workloads, less structured shift arrangements, hot environments, and lifestyle influences. However, some hotels have implemented control efforts such as regular briefings, task rotations, and the provision of break rooms, but have not been able to fully keep up with the high demands of work. This observation supports the need for further analysis of the risk factors for work fatigue in butlers as an important part of tourism services in the Province of Bali.

Figure 2. Private: Provision of food and drinks for villa guests carried out by *butler*

Based on an interview with Pak Wayan as a manager at one of the villas in Ubud Bali (interview, May 10, 2024), it is known that there are different types of butler services, namely semi butlers, which are basic butler services that may be included in the accommodation rate and 24-hour personal butlers, namely butlers. Especially available full time for guests, providing highly personalized service. This was also mentioned by Mr. Sudarmawan as the villa operational manager in the Canggu area who said that now personal butlers only exist in the luxury villa area and usually online bookings are made by guests who have come to visit twice and trust the villa or resort.

The observation results also show that one of the causes of fatigue among butler workers in Bali province in 2024 is temperature. The Denpasar Region III Meteorology, Climatology, and Geophysics Center (BBMKG) confirmed that the hot temperature that has hit Bali since the beginning of 2024 has peaked at 35 degrees Celsius. Although according to him, it is still within normal limits. Wiryajaya explained, although this temperature is slightly higher than the average temperature of 32.9 degrees Celsius, it has not reached an extreme level. Even in one of the districts in the province of Bali, namely Bulelelng Regency, according to official documents from the Meteorology, Climatology, and Geophysics Agency (BMKG), in early 2024 the maximum temperature was recorded to reach 38.8 °C. (Beritabali.com 2024).

The Relationship of Risk Factors with the Incidence of Work Fatigue

Individual Characteristic Factors

a. The Relationship Between Age and Work Fatigue

Based on the results of the study, the researcher obtained data on more employees aged < 45 years, with the calculation of the age of 12-25 years of 46.4%, the age of 26-45 years of age at 48.2% and the > of 45 years of age at 5.4%. Furthermore, from the results of bivariate analysis, it was found that age was significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p = 0.037$ or $p < 0.05$). This is not in line with the Family theory (2020) which states that younger individuals tend to have greater physical strength and energy reserves than those who are older. A person's age factor can affect their daily activities and the

quality of their work. Workers in the 40-50 age range are more likely to experience burnout faster compared to a relatively younger workforce (Family, 2020).

Age is one of the main factors that can cause work burnout, as this factor is closely related to performance. This is what can cause workers to experience work fatigue more easily as they age, because the process of organ degeneration is accelerating and the ability of the organs to decrease (Roslan et al., 2021; Sasangohar et al., 2020). Optimal physical ability is achieved at the age of 25 to 39 years and will continue to decline with age. In this study, most butler workers in the province of Bali are under 45 years old, which is 94.6%, which means that they are still touching the optimal number of physical abilities, so there is no significant relationship between age and work fatigue (Antonio, 2023).

b. The Relationship Between Sex And Work Burnout

Based on the results of the study, the researcher obtained data on more female butler employees in the province of Bali as much as 51.8%. Furthermore, from the results of the bivariate analysis, it was found that age sex was not significantly related to the incidence of work fatigue in butler workers in the province ($p = 0.367$ or $p > 0.05$). This is in line with the results of the research of Maranden, et al. (2023) where the p-value of sex is $0.923 > 0.05$ which means that the two variables are not related. Another relevant study found that there was no gender relationship and work stress at Dr. Pirngadi Hospital Medan (Ardiyany Ilyas, 2020). The next finding was that there was no relevance of gender and work stress of nurses at Abepura Hospital with a p-value of 0.396.

c. The Relationship Between Disease History and Work Fatigue

Based on the results of the study, researchers obtained data on more butler workers in the province of Bali who did not have a history of disease, namely 93.8%. Furthermore, from the results of bivariate analysis, it was found that Chronic Illness History was not significantly related to the incidence of work fatigue in butler workers in Bali province ($p = 0.072$ or $p > 0.05$). In contrast to the theory from Tayyari who said that health problems impact reducing a person's fitness and ultimately increasing the chance of fatigue events for employees (Dirgayudha, 2014). In this study, the history of chronic illness was not significantly related to the incidence of fatigue because in proportion to the respondents, there were only 6.3% who had a history of the disease.

d. The Relationship Between Sleep Disorders and Work Fatigue

Based on the results of the study, researchers obtained data on more butler workers in the province of Bali who had sleep disorders, which was 52.7%. Furthermore, from the results of bivariate analysis, it was found that sleep disorders were not significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p = 0.153$ or $p > 0.05$). This is in line with the results of Widajati's (2024) research where the p value is $0.224 > 0.05$, which means that the two variables are not related. The study conducted by Virgi et al. has similarities with this study, namely that workers who experience higher work fatigue are workers who experience poor sleep quality.

The lower the level of fatigue, the better the quality of sleep. Conversely, the higher the level of fatigue of the worker, the worse the quality of his sleep. The sleep process can be disrupted if workers experience work fatigue caused by work that exceeds the employee's ability. If the sleep process is disrupted, the expected sleep quality will not be achieved (Nafar et al., 2021; Naldi et al., 2021; Redeker et al., 2019). In this study, the workload was dominated

by a light workload so that it did not affect the quality of sleep which could cause fatigue for butler workers in the province of Bali.

b. The Relationship Between Lifestyle and Work Fatigue

Based on the results of the study, researchers obtained data on more butler workers in the province of Bali who had sleep disorders, which was 52.7%. Furthermore, from the results of the bivariate analysis, the results were found that sleep disturbances were not significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p = 0.119$ or $p > 0.05$). Greenhaus' (2003) theory in Geulis (2023) argues that work-life balance is a situation in which employees are able to manage in a balanced way between their work life and life outside of their work or entertainment outside of their work which can make the employee feel satisfied with the balance.

There are three aspects of work-life balance, namely Time Balance, Involvement Balance, and Satisfaction Balance. These same results also illustrate that employees can divide their time well between activities outside of work and activities at work.

Occupational Characteristics Factors

a. The Relationship Between Work Schedules and Work Fatigue

Based on the results of the study, the researcher obtained data on butler workers in the province of Bali who have a work schedule =/> of 40 hours, which is 87.5%. Furthermore, from the results of the bivariate analysis, it was found that sleep disturbances were not significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p = 0.738$ or $p > 0.05$). In theory, according to (Grandjean, 1997 in Safitri 2024) states that when experiencing fatigue, a person tends to recover, which is a process that can be done to reduce fatigue. So that the longer the rest obtained, the more fatigue will be reduced.

Another theory from ACTU states that shift changes from night to day and vice versa can have an impact on a person's cardiac rhythm. Because the body has read the clock of sleep patterns, wake patterns, body temperature, hormones, and others. So that with a change in working hours when changing work shifts, it will automatically disrupt the circadian system of the operators.

b. The Relationship Between Working Hours and Work Fatigue

Based on the results of the study, the researcher obtained data on more butler workers in the province of Bali who have </= 8 hours of work. Furthermore, from the results of bivariate analysis, it was found that working hours were not significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p = 0.119$ or $p > 0.05$). Like this theory, research (Safitri, 2024) states that there is no relationship between work duration and the incidence of work fatigue. The research from Safitri (2024) is also in line with the theory of Rosmilasari (2023) where from the results of his research, there is no relationship between the working hours of the respondents, in this case Class 1 KKP Makassar employees, to work fatigue. This is because respondents work more =/< than 8 hours/day which is enough time to work so that they do not feel tired. Similar to this study, where the researcher obtained data on more butler workers in the province of Bali who have </= 8 hours of work, which is 65.2%.

c. The Relationship Between Workload and Burnout

From the results of the bivariate analysis, it was found that working hours were not significantly related to the incidence of work fatigue in butler workers in the province of Bali

(p = 0.278 or p > 0.05). The results of statistical analysis of this study show that there is no relationship between workload and work fatigue. The positive value of this statistical analysis shows the handover correlation of the two variables. This study is in line with the findings that there is no relationship between workload and nurses' work fatigue with a p-value (0.364>0.005). This is due to the cooperation and awareness to help each other in the operations of the nurses (Kusumaningsih, 2020).

Another study stated that there was no relationship between workload and work stress in 19 nurses because the workload carried out did not pressure themselves to experience stress and cause fatigue in nurses (Sari, 2020).

d. The Relationship Between Working Time and Work Fatigue

From the results of the bivariate analysis, it was found that the working period was not significantly related to the incidence of work fatigue in butler workers in the province of Bali (p = 0.307 or p > 0.05). The results of statistical analysis of this study show that there is no relationship between workload and work fatigue. Research by (Ratnaningtyas et al., 2022) found that the working period was not related to fatigue in Semarang opak cracker workers. Aminulloh's research (2024) also says the same thing. In contrast to Boeskoesoe, et al. (2023), where their results and theories say that the working period has an effect on the fatigue of a worker, especially for the type of work that uses a large amount of work. This is a person's work activity that is carried out for a long time, if the activity is carried out continuously it can cause disturbances in the body, especially in the muscles.

In this study, as many as 67.0% of butler workers had a working period of less than 5 years. So that they are still relatively unexposed to the disruptions that occur caused by a working period of more than 5 years.

e. The Relationship Between Work Posture and Work Fatigue

From the results of the bivariate analysis, it was found that work posture was significantly related to the incidence of work fatigue in butler workers in the province of Bali (p < 0.000 or p < 0.05). This research is in line with the theory of Hijah (2021) which states that an incompatible work attitude will cause skeletal muscle pain and cause fatigue. Static postures such as looking down for too long are at high risk of causing health complaints, lack of relaxation or stretching of muscles while working can lead to lactic acid buildup in the muscles which triggers the onset of fatigue.

An unergonomic work posture can trigger muscle fatigue, discomfort at work, and can cause injuries, joint stiffness, and muscle pain complaints. Therefore, workers need to pay attention to ergonomic posture to minimize the risk of work fatigue, besides that workers can also do stretching before work or on the sidelines of work so that the body is not in a static position for a long time.

f. The Relationship Between Work Shifts and Work Fatigue

From the results of the bivariate analysis, it was found that work shifts were not significantly related to the incidence of work fatigue in butler workers in the province of Bali (p = 0.329 or p > 0.05). The results of statistical analysis of this study show that there is no relationship between work shifts and work fatigue. This study is not in line with the theory of Putra, et al. (2025) who found that there is a correlation between work shifts and work fatigue. According to Putra, et al. (2025), working on the night shift results in lower work productivity compared to working on the day shift. Circadian rhythms are human physiological and

psychological rhythms that are described over 24 hours and show changes every day. Night shifts cause workers to be very tired.

This condition can increase physical stress due to lack of nightly sleep, higher fatigue factors, and lower productivity of night shift workers. In this study, as many as 75% of butler workers who work shifts in the morning – evening is still somewhat more productive because their activities work better in the morning compared to in the afternoon and evening where the body is better to rest.

Environmental Perception Characteristic Factors

The Relationship Between Comfortable Temperature and Work Fatigue

From the results of the bivariate analysis, it was found that temperature was significantly related to the incidence of work fatigue in butler workers in the province of Bali ($p < 0.042$ or $p < 0.05$). This research is in line with the theory and research of Aswin (2023), based on the results of air temperature measurements in the work environment, uncomfortable or overheated temperatures can cause work fatigue, because exposure to hot working temperatures can disrupt the body's balance system where the body sweats a lot, loss of a lot of fluids due to sweating can certainly cause workers to experience fatigue. Age, nutritional status, length of work, workload, work posture and temperature of the work environment are factors that can increase the incidence of work fatigue, as a result of which concentration at work is reduced so that it can be harmful to K3.

Due to high ambient temperatures, the body gets excessive heating so that the body temperature will increase. A large amount of sweat is secreted to the surface of the skin by the sweat glands. Sweat contains a variety of electrolytes, especially sodium and chloride ions (Holman J.P, 2012 in Fachmi et al., 2023). The release of sodium and chloride ions will cause a decrease in strength. It will cause a decrease in muscle contractions so that the body experiences work fatigue.

CONCLUSION

Based on the results of the study, it can be concluded that work fatigue among butler workers in the tourism industry of Bali Province in 2024 is significantly influenced by non-ergonomic work postures and uncomfortable work environment temperatures, while individual factors such as age, medical history, sleep disorders, and lifestyle, as well as job factors such as work schedules, working hours, workload, length of service, and work shifts do not show a significant relationship. This indicates that ergonomic interventions and thermal environmental control are a top priority to reduce the risk of fatigue. For further research, it is recommended to conduct longitudinal studies to test the causal relationship between variables that are not significant in this cross-sectional design, as well as explore psychosocial factors such as work pressure, social support, and job satisfaction that may play a role in the phenomenon of fatigue in the butler worker population.

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