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RESEARCH ARTICLE

Occupational Workload and Work Stress as Correlates of Fasting Blood Glucose among Police Officers in Yogyakarta, Indonesia

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Beban Kerja, Stres Kerja, Kadar Glukosa, Diabetes Melitus, Polisi

Abstrak

Petugas kepolisian menghadapi tuntutan pekerjaan yang tinggi yang dapat berkontribusi terhadap stres psikologis serta risiko gangguan kesehatan metabolik. Namun, bukti mengenai hubungan antara beban kerja, stres kerja, dan kadar glukosa darah puasa pada anggota kepolisian di Indonesia masih terbatas. Penelitian ini bertujuan untuk menganalisis hubungan antara beban kerja, stres kerja, dan kadar glukosa darah puasa pada anggota Kepolisian Resor Kota Yogyakarta, Indonesia. Penelitian ini menggunakan desain cross-sectional dengan melibatkan 70 anggota polisi laki-laki aktif berusia 25–55 tahun. Beban kerja diukur menggunakan NASA Task Load Index, stres kerja diukur menggunakan Perceived Stress Scale-10, dan kadar glukosa darah puasa diukur menggunakan glukometer yang telah terstandarisasi. Data dianalisis menggunakan uji korelasi Spearman dengan tingkat signifikansi $p < 0,05$. Sebagian besar responden memiliki beban kerja tinggi dan tingkat stres kerja sedang hingga tinggi. Rata-rata kadar glukosa darah puasa adalah 150,19 ± 26,74 mg/dL. Beban kerja menunjukkan korelasi positif dengan kadar glukosa darah puasa ($r = 0,370$; $p = 0,002$). Stres kerja juga menunjukkan korelasi positif dengan kadar glukosa darah puasa ($r = 0,315$; $p = 0,008$). Beban kerja dan stres kerja memiliki hubungan yang signifikan dengan kadar glukosa darah puasa pada anggota kepolisian. Temuan ini menekankan pentingnya manajemen stres kerja, pengaturan beban kerja, serta skrining metabolik secara rutin di institusi kepolisian. Penelitian longitudinal lebih lanjut diperlukan untuk menjelaskan hubungan kausal secara lebih mendalam.

Key Word:
Workload, Work Stress, Glucose Levels, Diabetes Mellitus, Police

Abstract

Police officers are exposed to high occupational demands that may contribute to psychological stress and metabolic health risks. However, evidence regarding the association between workload, work stress, and fasting blood glucose among Indonesian police officers remains limited. This study examined the association between workload, work stress, and fasting blood glucose among police officers at the Yogyakarta City Police Resort, Indonesia. This cross-sectional study involved 70 active male police officers aged 25–55 years. Workload was measured using the NASA Task Load Index, work stress was assessed using the Perceived Stress Scale-10, and fasting blood glucose was measured using a standardized glucometer. Data were analyzed using Spearman's rank correlation test with a significance level of $p < 0.05$. Most respondents had high workload and moderate-to-high work stress. The mean fasting blood glucose level was 150.19 ± 26.74 mg/dL. Workload was positively correlated with fasting blood glucose ($r = 0.370$; $p = 0.002$). Work stress was also positively correlated with fasting blood glucose ($r = 0.315$; $p = 0.008$). Workload and work stress were significantly associated with fasting blood glucose among police officers. These findings highlight the need for occupational stress management, workload regulation, and routine metabolic screening in police institutions. Further longitudinal studies are needed to clarify causal pathways.

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PENDAHULUAN

The police profession is often viewed as a job that involves high demands and continuous pressure (Baldwin et al., 2019). Police officers carry out duties that include long working hours, safety risks, and strict professional standards (Arble et al., 2019). These work activities not only affect physical conditions but also have the potential to cause psychological stress (Raju et al., 2020).

Observations at the national police level indicate that around 80% of personnel in criminal investigation and traffic regulation units experience mental pressure due to job demands (Shindy & Malau, 2019). This condition reflects the presence of mental health issues within the police work environment. If not properly addressed, it can develop into broader organizational problems.

Work stress is one of the mental health factors affecting the working population in Indonesia,

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particularly those in the productive age group (Putri et al., 2023). This condition arises from workload, time pressure, and work relationships with colleagues and superiors. Each individual responds differently to work pressure depending on personal characteristics and job situations (Nurwiranti & Rachmah, 2019).

Law Number 2 of 2002, Article 14 concerning the Indonesian National Police outlines police duties related to regulation, security, and patrol. Findings published in the International Journal of Police Science & Management indicate a 15% increase in hypertension cases among police officers over five years, accompanied by a decline in job satisfaction of up to 40% due to high workloads. Traffic personnel are reported to have stress levels approximately 20% higher than other units. A meta-analysis by Susanto et al. (2024) shows that high workload increases the risk of psychosomatic disorders by 1.8 times, while stress management programs can reduce stress levels by around 30%.

Prolonged stress triggers an increase in hormones such as catecholamines, glucagon, glucocorticoids, β-endorphins, and growth hormone, leading to elevated cortisol levels (Al Fatih et al., 2023). Cortisol has an antagonistic effect on insulin, resulting in increased blood glucose levels (Sharma et al., 2022). This condition may disrupt glucose homeostasis if it persists over time. Insulin resistance can occur due to decreased cellular sensitivity to insulin, causing persistently high glucose levels and potentially progressing to Type 2 Diabetes (Naibaho et al., 2020). Data show an increase in the prevalence of Diabetes Mellitus in Indonesia from 6.9% in 2013 to 10.9% in 2018 (Al Fatih et al., 2023), with projections rising from 8.4 million cases in 2020 to 21.3 million by 2030 (Tjahyono et al., 2024).

This study contributes contextually to the occupational health literature by examining the simultaneous relationship between workload, work stress, and fasting blood glucose levels among police officers in Indonesia. Unlike many previous studies that focus more broadly on work stress and metabolic syndrome, this research specifically links objectively measured workload using the NASA-TLX and work stress measured using the PSS-10 to fasting blood glucose levels in an active police population.

METODE PENELITIAN

This study is an analytical observational study with a cross-sectional design aimed at assessing the relationship between workload, work stress, and fasting blood glucose levels among respondents. The research was conducted at the Yogyakarta City Police Resort (Polresta Kota Yogyakarta) after obtaining ethical approval from the Ethics Committee of Universitas Muhammadiyah Yogyakarta. Data collection was carried out within a specific time period, in which all variables were measured simultaneously.

The study population consisted of active police officers, with sample selection based on predetermined inclusion and exclusion criteria. Respondents who met the criteria were provided with an explanation of the study objectives and signed informed consent prior to participation. The sample size was determined using an analytical approach for correlation testing, taking into account the level of significance and adequate statistical power.

The main variables in this study included workload, work stress, and fasting blood glucose levels. Workload was measured using the NASA Task Load Index questionnaire, which consists of six dimensions: mental demand, physical demand, temporal demand, performance, effort, and frustration level. Each dimension was rated on a 0–100 scale and calculated into a weighted average score. Work stress was measured using the Perceived Stress Scale-10, which consists of 10 items on a Likert scale of 0–4, and then categorized into low, moderate, and high stress levels based on a total score of 0–40.

Fasting blood glucose levels were measured using a standardized glucometer in accordance with ISO 15197:2013, through capillary blood samples taken from the respondents' fingertips. Measurements were conducted with attention to fasting duration and information on the last food intake to enhance result validity. The results were recorded in mg/dL and used as an initial indicator of glycemic status. Referring to the guidelines of the American Diabetes Association, fasting blood glucose levels were classified as normal (<100 mg/dL), prediabetes (100–125 mg/dL), and values requiring further clinical evaluation (≥126 mg/dL). However, in this study, the results were not used to establish a diagnosis of diabetes, but rather as an indication requiring confirmatory testing on a different day.

The data sources in this study were derived from primary data collected through questionnaires and direct measurements. The research instruments had undergone validity and reliability testing based on prior references. The NASA-TLX demonstrated construct validity with correlation coefficients ranging from 0.72–0.86 and a Cronbach's alpha reliability of 0.89. The Indonesian version of the PSS-10 showed construct validity with factor loadings of 0.65–0.82 and a Cronbach's alpha reliability of 0.85.

To minimize potential bias, the researcher provided standardized instructions to all respondents, used standardized instruments, and ensured relatively consistent measurement conditions. However, the

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possibility of information bias and selection bias remains, given the cross-sectional design and the use of self-report data for psychological variables.

Data analysis was performed using IBM SPSS Statistics 26. Descriptive analysis was used to describe respondent characteristics and variable distributions. Normality testing was conducted using the Kolmogorov-Smirnov test. Relationships between variables were analyzed using the Spearman correlation test ($p < 0.05$). Differences between groups were analyzed using the independent t-test or Mann-Whitney U test, depending on data distribution. Additionally, confounding variables such as age, body mass index, and dietary habits were considered in interpreting the results.

The limitations of this study include the cross-sectional design, which cannot explain causal relationships, the use of a single blood glucose measurement without repeated confirmation, and the potential for subjective bias in questionnaire responses.

HASIL DAN PEMBAHASAN

Based on the study results, a total of 70 subjects were included. The subjects were police officers working at the Yogyakarta City Police Resort (Polresta Yogyakarta). The inclusion criteria were active police personnel at Polresta Yogyakarta, aged 25–55 years, with a minimum of 1 year of service, and willing to participate by signing informed consent. The exclusion criteria included officers who were on leave (not actively working), had a history of Diabetes Mellitus, were undergoing treatment affecting blood glucose levels, or were pregnant (for female officers).

Table 1. Frequency Distribution of Respondents

Variable	Frequency	Percentage (%)
Gender		
Male	70	100,0
Female	0	0,0
Usia		
Aged 25–29 years	5	7,1
Aged 30-39 years	14	20,0
Aged 40-49 years	42	60,0
Aged 50-55 years	9	12,9
Workload		
Low	4	5,7
Moderate	7	10,0
Somewhat High	16	22.9
High	32	45,7
Very High	11	15,7
Work Stress		
Low	15	21,4
Moderate	26	37,1
High	29	41,4

Based on Table 1, the frequency distribution of respondents by gender shows that all respondents were male, totaling 70 individuals (100.0%). The age distribution indicates that the majority of respondents were aged 40–49 years, with 42 individuals (60.0%). The distribution based on workload shows that most respondents had a high workload, totaling 32 individuals (45.7%). Meanwhile, the distribution based on work stress reveals that the majority of respondents experienced high levels of work stress, with 29 individuals (41.4%).

Table 2. Distribution of Respondents' Fasting Blood Glucose Levels

	Minimum	Maximum	Mean	Std. Deviation
Fasting Blood Glucose Level	102.4	204.6	150,190	26,7415

Based on Table 2, the distribution of respondents' fasting blood glucose levels shows that the lowest level was 102.4 mg/dL, while the highest level was 204.6 mg/dL. The mean fasting blood glucose level was 150.1 mg/dL.

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Table 3. Frequency Distribution of Work Stress Based on the Perceived Stress Scale-10

No.	Statement	Never n (%)	Almost Never n (%)	Sometimes n (%)	Quite Often n (%)	Very Often n (%)
1	In the past month, how often have you felt angry because of something unexpected in your work?	35 (50,0)	17 (24,3)	8 (11,4)	6 (8,6)	4 (5,7)
2	In the past month, how often have you felt unable to control important things in your work?	33 (47,1)	13 (18,6)	5 (7,1)	13 (18,6)	16 (8,6)
3	In the past month, how often have you felt anxious and stressed while carrying out your duties as a police officer?	32 (45,7)	11 (15,7)	3 (4,3)	13 (18,6)	11 (15,7)
4	In the past month, how often have you felt confident in your ability to handle personal problems that arise during duty?	46 (65,7)	10 (14,3)	3 (4,3)	9 (12,9)	2 (2,9)
5	In the past month, how often have you felt that everything happening in your work was going according to your expectations?	42 (60,0)	16 (22,9)	4 (5,7)	6 (8,6)	2 (2,9)
6	In the past month, how often have you felt unable to complete the tasks required in your police duties?	28 (40,0)	12 (17,1)	3 (4,3)	10 (14,3)	17 (24,3)
7	In the past month, how often have you been able to control feelings of irritability in your work situation?	30 (42,9)	12 (17,1)	7 (10,0)	20 (28,6)	1 (1,4)
8	In the past month, how often have you felt more capable of handling work-related problems compared to your colleagues?	24 (34,3)	17 (24,3)	12 (17,1)	15 (21,4)	2 (2,9)
9	In the past month, how often have you felt angry because of problems you could not control in your duties?	30 (42,9)	9 (12,9)	4 (5,7)	12 (17,1)	15 (21,4)
10	In the past month, how often have you felt angry because of problems you could not control in your duties?	26 (37,1)	9 (12,9)	5 (7,1)	12 (17,1)	18 (25,7)

Based on Table 3, a total of 35 respondents (50.00%) reported that they had never felt angry in the past month due to something unexpected at work. Meanwhile, 16 respondents (8.6%) reported that they very often felt unable to control important things in their work during the past month, and 18 respondents (25.7%) reported that they very often felt angry due to problems they could not control in their duties.

Table 4. Normality Test of Workload and Blood Glucose Levels

	Workload Category	Kolmogorov-Smirnov[a] Statistic	Df	Sig.
Blood Glucose Levels	Low	.262	4	.
	Moderate	.166	7	.200*
	Somewhat High	.177	16	.192
	High	.249	32	<001*
	Very High	.265	11	.030*

Based on Table 4, the normality test of workload and blood glucose levels shows significance values of < 0.05, indicating that the data are not normally distributed. Therefore, the bivariate analysis of the relationship between workload and blood glucose levels will be conducted using the Spearman test.

Table 5. Normality Test of Work Stress and Blood Glucose Levels

	Stres Kerja	Kolmogorov-Smirnov[a] Statistic	Df	Sig.
Blood Glucose Levels	Low	.210	15	0,750
	Moderate	.176	26	0,037
	High	.155	29	0,074

Based on Table 5, the normality test of work stress and blood glucose levels shows significance values of < 0.05, indicating that the data are not normally distributed. Therefore, the bivariate analysis of the relationship between work stress and blood glucose levels will be conducted using the Spearman test.

Table 6. Relationship Between Workload and Blood Glucose Levels

			Blood Glucose	Workload
Spearman's rho	Blood Glucose	Correlation Coefficient	1.000	.370
		Sig. (2-tailed)	.	.002
		N	70	70

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Based on Table 6, the relationship between workload and blood glucose levels is presented. The results of the analysis using the Spearman test show a p-value of 0.002, indicating a significant relationship between workload and blood glucose levels (p-value < 0.05). The correlation coefficient is 0.370, which indicates a moderate relationship with a positive direction (+). This means that the higher the workload, the higher the blood glucose levels.

Table 7. Relationship Between Work Stress and Blood Glucose Levels

			Blood Glucose	Work Stress
Spearman's rho	Blood Glucose	Correlation Coefficient	1.000	.315
		Sig. (2-tailed)	.	.008
		N	70	70

Based on Table 7, the relationship between work stress and blood glucose levels is presented. The results of the Spearman test show a p-value of 0.008, indicating a significant relationship between work stress and blood glucose levels (p-value < 0.05). The correlation coefficient is 0.315, which indicates a moderate relationship with a positive direction (+). This means that the higher the level of work stress, the higher the blood glucose levels.

The correlation value, which falls within the moderate category, indicates that fasting blood glucose is a multifactorial biological parameter. Although workload and work stress are statistically significantly associated with blood glucose levels, their contributions are limited by the body's homeostatic mechanisms and the influence of other external factors that were not strictly controlled in this study.

The Relationship Between Workload and Blood Glucose Levels Among Police Officers at Polresta Yogyakarta

The workload of police officers at Polresta Yogyakarta, measured using the NASA Task Load Index, shows a notably high level, with 32 individuals (45.7%) categorized as having a high workload. This condition is consistent with the results of fasting blood glucose measurements using a glucometer, which recorded an average value of 150.1 mg/dL—clinically concerning as it exceeds the normal threshold. According to the American Diabetes Association (2024), individuals without classic symptoms of hyperglycemia who have fasting blood glucose levels ≥126 mg/dL may be diagnosed with diabetes, while levels between 100–125 mg/dL are classified as impaired fasting glucose (IFG) or prediabetes. The finding of glucose levels reaching 150 mg/dL in subjects without a prior history of diabetes suggests the presence of Stress-Induced Hyperglycemia, a reactive hyperglycemic response triggered by chronic occupational stress within the policing environment.

Statistical analysis using the Spearman test confirms a significant relationship between workload and fasting blood glucose levels, with a p-value of 0.002 ($p < 0.05$). Police officers carrying heavier workloads tend to exhibit higher blood glucose levels, a finding consistent with Chaturvedi et al. (2025), who reported an increased risk of Diabetes Mellitus among law enforcement personnel. Their study further highlighted that 29.2% of police officers fall into the prediabetes or diabetes category—an ironic finding considering the strict health requirements during recruitment. The decline in health status after entering the profession reinforces the role of workload and lifestyle patterns as key determinants influencing elevated blood glucose levels among active personnel.

Supriyadi et al. (2025) explain that the workload of police officers is particularly demanding due to the need to perform five primary functions simultaneously: investigation, intelligence, communication, traffic management, and security. Investigative duties require intensive evidence gathering, while intelligence tasks demand constant vigilance toward potential public incidents. As communicators, officers must maintain positive interactions with the community. Operational responsibilities also include managing traffic flow and ensuring security through routine patrols, detainee supervision, and protection of police headquarters. This high level of task complexity often results in irregular working hours, ultimately disrupting the physical and mental stability of officers in their daily duties.

Kim et al. (2024) emphasize that irregular working hours among police officers negatively affect sleep patterns and disrupt the body's natural circadian rhythm. John M. Violanti et al. (2017) also demonstrated a positive correlation between heavy workload and an increased risk of sleep disorders, chronic fatigue, and depressive symptoms among police personnel. Chaudhry et al. further highlight that sleep duration of less than six hours or more than nine hours can negatively alter glucose metabolism, thereby increasing the risk of Type 2 Diabetes. Sleep deprivation is associated with reduced glucose utilization by the brain and increased insulin resistance, particularly due to limited rapid eye movement (REM) cycles, which play a vital role in glucose regulation within the human body.

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Salvagioni et al. note that excessive workload not only damages physical health but also triggers stress and burnout, characterized by emotional exhaustion, depersonalization, and decreased work motivation. Fitri et al. demonstrate that high stress levels in police officers directly affect fluctuations in blood glucose levels due to unstable hormonal responses. Kordel et al. explain that stress activates the Hypothalamic-Pituitary-Adrenal Axis, which systemically influences glucose metabolism. Sharma et al. reinforce this by stating that stress disrupts the regulation of glucocorticoid and catecholamine hormones, while Azzahra et al. add that glucocorticoids such as cortisol increase gluconeogenesis and glycolysis, leading to spikes in blood glucose levels.

James et al. describe that the sympathetic-adrenal-medullary system and the HPA axis are the two primary neuroendocrine systems responsible for responding to acute stressors through the secretion of catecholamines such as norepinephrine, epinephrine, and dopamine. Activation of the HPA axis stimulates the hypothalamus to release corticotropin-releasing hormone (CRH), which triggers the anterior pituitary gland to produce adrenocorticotropic hormone (ACTH), ultimately signaling the adrenal cortex to release cortisol. Knezevic et al. explain that only about five percent of free cortisol is biologically active and capable of entering cells to interact with glucocorticoid receptors, facilitating feedback inhibition. This active cortisol plays a central role in regulating how the body manages energy and glucose under continuous work-related stress.

Active cortisol stimulates lipogenic enzymes and increases hunger signals in the brain, leading to excessive appetite and a higher risk of obesity. The accumulation of adipose tissue associated with obesity can result in insulin resistance, a condition in which insulin becomes less effective in regulating blood glucose fluctuations. Fitri et al. further emphasize that stress stimulates the endocrine glands to release epinephrine, which triggers gluconeogenesis in the liver, causing a rapid release of large amounts of glucose into the bloodstream. Chronic stress, over time, can impair the pancreas's ability to regulate insulin production optimally, resulting in persistently elevated blood glucose levels that pose serious health risks for police personnel.

The Relationship Between Work Stress and Blood Glucose Levels Among Police Officers at Polresta Yogyakarta

The level of work stress among police officers at Polresta Yogyakarta, measured using the Perceived Stress Scale-10, shows a high distribution. The fasting blood glucose levels of the respondents reached an average of 150 mg/dL, even though all subjects had no prior history of Diabetes Mellitus. This condition indicates the presence of Stress-Induced Hyperglycemia, a functional phenomenon that arises as a physiological defense response to chronic occupational stress. The results of the Spearman analysis show a significant relationship between work stress and fasting blood glucose levels ($p = 0.008$; $p < 0.05$), confirming that psychological pressure is positively correlated with increased blood glucose levels. The finding of fasting blood glucose at 150 mg/dL requires careful medical interpretation, as it may represent reversible SIH if stressors are removed, or alternatively indicate undiagnosed diabetes that has not yet been clinically confirmed.

The release of stress hormones such as cortisol and catecholamines promotes gluconeogenesis and glycogenolysis, directly influencing fluctuations in fasting blood glucose levels among police personnel. Both the central and peripheral nervous systems are actively involved in this complex neuroendocrine mechanism, where increased serum glucocorticoid concentrations due to psychological stress elevate insulin demand while simultaneously worsening insulin resistance at the cellular level. Chronic work stress activates two major systems simultaneously: the Sympatho-Adrenomedullary System, which releases catecholamines, and the Hypothalamic-Pituitary-Adrenal Axis, which secretes cortisol from the adrenal cortex. Adrenaline and noradrenaline released from the adrenal medulla prepare the body to مواجهة acute stressors through the fight-or-flight response by mobilizing large energy reserves into the bloodstream.

Cortisol plays a central role as a glucocorticoid hormone that modulates energy metabolism by increasing glucose production, suppressing insulin effectiveness, and promoting lipolysis. Persistent elevation of cortisol over time can lead to sustained hyperglycemia, systemic insulin resistance, and the accumulation of abdominal fat or obesity. This increase in blood glucose involves the stimulation of enzymes such as phosphoenolpyruvate carboxykinase (PEPCK) by cortisol, epinephrine, and norepinephrine, which convert non-carbohydrate substrates such as lactate, alanine, and glycine into glucose. Catecholamines further exacerbate the condition by inhibiting insulin receptor substrate (IRS) activity, thereby impairing insulin binding and glucose transport into cells through GLUT-4 translocation.

Glucocorticoids limit insulin-mediated glucose uptake in muscle tissue, while growth hormone

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prevents insulin activation at tyrosine residues, resulting in reduced glucose absorption in both muscle and adipose tissue. The accumulation of glucose in the bloodstream occurs because hepatic glucose production continues to increase, while its utilization in peripheral tissues is systematically inhibited by stress hormones. Chronic stress gradually leads to reduced body mass while simultaneously promoting insulin resistance and visceral fat accumulation, which are highly detrimental to long-term metabolic health. Studies by Chaturvedi et al. (2025) confirm that police officers face a high risk of diabetes due to extreme work stress, while Fazrina & Irawan (2024) report that the policing profession experiences significantly higher stress levels compared to other occupational groups.

Santre (2024) confirms that police personnel are at higher risk of mental health disorders compared to the general population due to exposure to intense and diverse occupational stressors. Purba & Demou (2019) classify police stressors into four main categories: organizational practices, the criminal justice system, public pressure, and the intrinsic nature of the job, all of which contribute to both operational and organizational stress. Factors such as low salary, social pressure, rigid police culture, unstable management, and lack of peer support further exacerbate the psychological burden. Boivin et al. (2022) add that long and irregular shift schedules lead to serious sleep disturbances and chronic fatigue, disrupting circadian rhythms and triggering sudden increases in cortisol levels.

Chaudhry et al. (2023) state that disrupted sleep patterns physiologically alter glucose metabolism and reduce glucose utilization by the brain, ultimately increasing insulin resistance. Al Fatih et al. (2023) explain that stress elevates various counter-regulatory hormones such as glucagon, glucocorticoids, β-endorphins, and growth hormone, which collectively oppose insulin action and maintain high blood glucose levels. Adam et al. (2017) describe that the initial stage of chronic stress begins with activation of the HPA axis, leading to persistent cortisol production that disrupts insulin sensitivity and enhances hepatic gluconeogenesis. Hänsel et al. (2010) highlight that long-term stress exposure increases inflammatory markers such as IL-6 and TNF-α, which directly contribute to pancreatic beta-cell dysfunction and persistent glucose dysregulation.

Fitria et al. (2021) note that cortisol-induced activation of lipogenic enzymes generates hunger signals in the brain, leading to overeating and increased risk of obesity and insulin resistance among police officers. James et al. (2023) emphasize the crucial role of the sympathetic-adrenal-medullary system in releasing epinephrine, which rapidly triggers the release of large amounts of glucose from the liver into the bloodstream. Knezevic et al. (2023) explain that free cortisol can enter cells and interact with glucocorticoid receptors to facilitate feedback inhibition in the hypothalamus and pituitary gland. Finally, Hackett and Steptoe (2017) conclude that increased cortisol and epinephrine due to psychosocial stress are associated with a 39% higher risk of Type 2 Diabetes, as excess blood glucose cannot be efficiently utilized by body cells due to impaired insulin regulation.

KESIMPULAN

Workload shows a statistically significant positive relationship with fasting blood glucose (FBG) levels among police officers, with a correlation strength of r = 0.370. This indicates that the heavier the workload, the higher the tendency for increased blood glucose levels. Work stress also demonstrates a significant positive relationship, with a correlation coefficient of r = 0.315, as chronic psychological pressure triggers activation of the Hypothalamic-Pituitary-Adrenal Axis, leading to increased cortisol secretion, reduced insulin sensitivity, and elevated blood glucose levels. The findings of this study indicate that both workload and work stress are positively associated with fasting blood glucose levels among police officers. These results support the concept that occupational stressors can contribute to metabolic changes through activation of neuroendocrine systems, particularly the HPA axis. Activation of this system increases the secretion of cortisol and catecholamines, which in turn enhances hepatic glucose production and reduces insulin sensitivity. However, due to the cross-sectional design of this study, the observed relationships cannot be interpreted as causal. Other factors such as body mass index, dietary patterns, physical activity, sleep quality, family history of Diabetes Mellitus, and shift work patterns may also influence fasting blood glucose levels.

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