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The Impact of eWaste on the Mental Health of Electronic Waste Workforce in Ghana

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Abstract: This study examines the impact of electronic waste work on the mental well-being of informal workers in Agbogbloshie and Ashaiman, Ghana two major recycling hubs notorious for hazardous and unregulated environments. While extant literature has largely focused on environmental and physical health consequences, the psychological toll of this work remains insufficiently explored. Using a mixed-methods design combining surveys (N=100) and interviews (N=5), this study assesses the prevalence of mental health conditions, determinants, and coping mechanisms among e-waste workers. Results show a high prevalence of depression, anxiety, and stress, fueled by long-term exposure to toxic substances, no use of personal protective equipment (PPE), irregular income, job insecurity, and social stigma. Coping strategies are mainly informal, such as dependence on religious beliefs, social support, and alcohol or drug use, with little use of professional mental health services. The lack of institutional safety protocols and poor access to healthcare heighten workers' vulnerabilities. The research emphasizes the synergistic interplay of socioeconomic adversity and occupational danger that compounds psychological stress. By synthesizing quantitative findings with workers' personal narratives, it provides an in-depth perspective on e-waste workers lived experience. The findings call for immediate culturally competent community-based mental health services, enhanced safety training, and stricter regulatory oversight to safeguard and advocate for the well-being of this vulnerable worker population.

Keywords: Mental health, Vulnerabilities, Coping mechanism, Hazardous, eWaste Workforce.

Introduction

The impact of e-waste on the mental health of electronic waste workers in Ghana is a topic of concern. Electronic waste, or e-waste, is a term used to describe discarded electronic devices such as computers, mobile phones, and large household appliances (WHO 2023). The World Health Organization (WHO) has identified e-waste recycling activities as a potential source of several adverse

impacts on human health, including mental health. Children and pregnant women are particularly vulnerable to the effects of e-waste exposure (WHO 2023).

According to Okeme et al (2019), Ghana is one of the countries in Africa that has become a dumping ground for e-waste from developed countries .The e-waste recycling sector in Ghana is a subsector of the industrial sector, and the International Labor Organization (ILO) estimates that millions of women and child laborers working in the informal recycling sector around the world may be at risk of e-waste exposure (WHO 2023). In Sarkar et al (2013), conducted a study which also highlights the adverse health effects that can result from exposure to contaminants associated with e-waste, including obesity, asthma, and neurodevelopmental disorders.

The mental health of e-waste workers in Ghana is a growing concern. Sampong et al (2015) research emphasis that e-waste workers were at a higher risk of developing depression and anxiety compared to the general population. WHO 2020, discovered that e-waste workers had a higher prevalence of post-traumatic stress disorder (PTSD) symptoms compared to the general population. In conclusion, the impact of e-waste on the mental health of electronic waste workers in Ghana is a serious issue that requires attention. The e-waste recycling sector is a subsector of the industrial sector, and millions of women and child laborers working in the informal recycling sector around the world may be at risk of e-waste exposure with many deformities from the chemical contaminations and poisoning from carcinogenic fumes from burning or recycling the e-waste (WHO 2019). In Ibrahim Issah research (2015) et al e-waste workers in Ghana are at a higher risk of developing depression, anxiety, and PTSD symptoms compared to the general population. It is important to address this issue and take steps to protect the mental health of e- waste workers in Ghana and around the world.

The preamble of the study

E-waste recycling is a major informal business in Ghana, particularly in localities such as Agbogbloshie, which provides livelihood for numerous individuals. Nevertheless, it is a dangerous occupation due to the exposure to harmful chemicals such as heavy metals and carcinogenic compounds, which have severe physical health implications. Though a lot of attention has been given to such physical dangers, the mental health implications of e-waste recycling are still largely unexamined and unrecognized. Workers are exposed to poor working conditions, inadequate protective gear, and long-term exposure to toxic materials, resulting in not only physical diseases but also mental disorders such as depression, anxiety, and stress-related complications. The psychological stress is compounded by the informal, insecure status of their work, low income, and lack of social protection. Of particular concern is the limited understanding of the coping strategies used by e-waste workers to deal with their mental health problems. Many rely on informal sources of support, such as social networks and religious beliefs, although some might turn to negative coping mechanisms like substance use. Accessing professional mental health services is generally constrained or out of reach for these workers. This gap in understanding and support hinders efforts towards promoting their general well-being and productivity. This research seeks to bridge this gap by assessing the prevalence of mental health problems in Ghana's e-waste workers, determining occupational and environmental determinants, and understanding their coping strategies (Hossen & Pauzi, 2025b). The results plan to inform the creation of culturally relevant mental health interventions, community counseling, and better occupational safety practices specific to the informal sector. The research ultimately aims to safeguard

and improve workers' mental health and foster sustainable health practices in Ghana's e-waste recycling sector.

Literature Review

Toxic Exposure and Neuropsychological Impairment

Long-term exposure to toxic substances in informal electronic waste recycling, especially at sites like Agbogbloshie, has a significant impact on the mental health of workers. Neurotoxic heavy metals like lead, cadmium, and mercury interfere with neurological processes, causing symptoms like anxiety, memory loss, and cognitive fatigue. The research by Aboagye, Mensah, and Boateng (2016) highlights how common and dangerous these exposures are in the context of unregulated environments. Grant et al. (2013) further correlate continued exposure to such toxins with increased chances of suffering from depression, anxiety, and other neuropsychiatric disorders. Srigboh et al. (2016) also point out that exposure to a range of toxic compounds increases vulnerabilities in mental health. This body of research makes it evident that the mental health issue of e-waste workers stems not only from socio-environmental factors but is also intrinsically connected to immediate biological damage due to long-term exposure to toxic substances.

Dangerous Working Conditions as Psychological Stressors

Aside from toxic exposure, the informal e-waste industry is characterized by dangerous, unstable working conditions that compound mental distress. Akormedi, Asampong, and Fobil (2013) characterize these workplaces as physically unsafe and emotionally damaging, promoting chronic stress. Ibrahim, Mensah, and Boateng (2015) document widespread depression, anxiety, and PTSD among e-waste workers. Sampong, Amoako, and Mensah (2015) likewise uncovered more than 60% of workers report depressive symptoms on a regular basis due to hazardous, unregulated working conditions (Hossen & Pauzi, 2025a). The instability of work with poor protective equipment and job insecurity coupled with the context of work generates a work environment in which risks to mental health are pervasive, demonstrating that psychological strain is intrinsic to the occupational setting itself.

Socioeconomic Barriers to Mental Health Care and Support

Mental health issues among e-waste workers are compounded by socioeconomic adversity. Most venture into the industry due to poverty and low education, with limited alternatives, which forces them to endure psychological distress while ignoring well-being (Amankwaa, 2013). Help-seeking is low due to stigma, ignorance, and unaffordable mental health services, as identified by Asampong et al. (2015). The International Labour Organization (2019) points out that informal sector hardly offer formal mental health care, trivializing untreated emotional distress. These circumstances create a vicious cycle where economic precariousness and systemic disregard entrench chronic psychological damage without remedy.

Environmental Inequity and Systemic Factors Leading to Psychological Distress

The e-waste workers' mental health crisis is located within an environmental injustice context. Hazardous e-waste is exported by rich countries to developing nations, like Ghana, disproportionately leaving vulnerable populations to contend with immense risks (Brigden et al., 2008; Oteng-Ababio, 2012). Such systemic violence produces sentiments of powerlessness, resentment, and despair known precursors to anxiety and depression (Grant et al., 2013). The United Nations Environment Programmed (UNEP, 2019) and the World Health Organization (WHO, 2020) highlight that, without global regulatory reforms and ethical responsibility from exporting nations, these psychological harms will persists .The mental health crisis, therefore, in this sector has its roots in both global inequalities and localized occupational hazards.

Theoretical Frameworks: Socio-Ecological Model (SEM)

The Socio-Ecological Model (SEM) presents a multi-layered perspective to explain how individual, social, environmental, and structural factors intersect to produce e-waste workers' mental health. At the individual level, long-term exposure to neurotoxic metals causes anxiety, depression, and cognitive impairment (Grant et al., 2013; Srigboh et al., 2016). Limited education decreases hazard awareness and protection (Aboagye, Mensah, & Boateng, 2016). Socially, workers experience isolation and stigma that undermine emotional support (Asampong et al., 2015). Communities have no access to mental health care, and workplace insecurity and safety risks trigger chronic stress (Akormedi, Asampong, & Fobil, 2013). At the societal level, global environmental injustice sustains these risks by externalizing hazards onto marginalized communities (Oteng-Ababio, 2012; Brigden et al., 2008). SEM consolidates these intersecting levels to explain the multifaceted contributors to mental health vulnerability among informal e-waste workers.

Theoretical Frameworks: Job Demand-Control-Support (JDCS) Model

The JDCS model predicts mental health results through job demands, worker control, and the availability of support. Informal e-waste work is characterized by excessive physical demands, dangerous conditions, long hours, and irregular schedules that result in mental exhaustion (Ibrahim, Mensah, & Boateng, 2015). Workers have little control over tasks or protective gear, promoting stress and powerlessness (Sampong, Amoako, & Mensah, 2015). Social support is tenuous because of workplace fragmentation and stigma. Cultural taboos and a lack of mental health services prohibit professional intervention, promoting maladaptive coping such as substance use and emotional withdrawal (Asampong et al., 2015). The JDCS model clearly illustrates how skewed job structures and a lack of support exacerbate psychological hazards in informal e-waste employment. Integrative Value of SEM and JDCS Coupling SEM with JDCS yields a holistic model of mental health among informal e-waste workers. SEM explains macro-level determinants global environmental injustice, community stigma, workplace dangers while JDCS addresses proximal job stressors such as high demands, low control, and unsatisfactory support (Alam et al., 2025). The coupling demonstrates how systemic disparities play out in everyday occupational stress, informing multi-level interventions. Macro interventions involve international regulation of e-waste and communal infrastructural development; micro interventions address workplace safety, peer support, and empowering workers (Hossen, 2023). The combined models inform research and policy initiatives to mitigate mental health risk and promote well-being in marginalized work environments.

Objectives

1 Identify common mental health issues among Ghana's e-waste workers.

2 Investigate occupational and environmental contributors to mental health challenges.

3 Explore coping mechanisms used by e-waste workers.

Research Questions

1. What mental health issues do Ghana's electronic waste workers experience, and how do these impact their lives?

2. What factors contribute to these mental health issues, and how might they be addressed?

Methodology

Research Design

A mixed-methods approach was used combining quantitative surveys (N=100) and qualitative interviews (N=5) to assess mental health status and coping.

Study Sites

Agbogbloshie and Ashaiman, prominent informal e-waste hubs in Ghana

Population and Sampling

Informal e-waste workers aged 18+, currently working, were surveyed via stratified random sampling. Five key informants including supervisors and health workers were interviewed.

Data Collection

1 Questionnaires: Demographics, hazards, mental health symptoms, coping.
2 Semi-structured Interviews: Personal experiences, stressors, perceptions.

3 Field Observation: Work environment, PPE use.

Analysis Quantitative data analyzed via descriptive statistics in SPSS; qualitative data coded thematically in NVivo.

Ethics

Approvals obtained; informed consent, confidentiality, and withdrawal rights ensured.

Results and Discussion

Demographic Characteristics of Respondents

There were data gathered from 100 respondents, 50 from Agbogbloshie and 50 from Ashaiman. The most prominent age group was 18–24 years (39%), with Ashaiman having the largest portion (27%). The next was 25–34 years (33%), primarily from Agbogbloshie (23%). The 35–44 years made up 14%, while 45–54 and 55+ each made up 3%. There was a small number (8%) that was below 18, which is a cause for concern regarding child labor.

In total, 72% of interviewees were aged 18–34 years, indicating a largely youth-led workforce. This is indicative of the labor-intensive nature of e-waste activities and a lack of alternative job opportunities for youth.

Education

About 76% had some formal education, while 24% had none. Most (60%) had completed only primary school, followed by 14% with secondary education. Tertiary-level education was rare (2%), found only in Ashaiman. This suggests limited educational opportunities push individuals toward informal labor.

Occupation

E-waste collection was predominant, occupying 70% of respondents (34 in Agbogbloshie, 36 in Ashaiman). Dismantlers constituted 20%, repairers 6%, and recyclers 4%. The industry is characterized by low skills and labor intensity, with workers being exposed to risks as a result of lax safety practices. Revenue The majority of workers (46%) had GHS 500–999 per month, equally divided between sites. Approximately 30% had GHS 100–499, a bit more in Agbogbloshie. Approximately 16% had GHS 1,000–4,999, and 8% had GHS 5,000+, primarily in Ashaiman. These results indicate that e-waste employment is largely low-paid, with the majority taking home less than GHS 1,000, an indicator of economic insecurity. Briefly, the e-waste industry in Agbogbloshie and Ashaiman is characterized by a predominance of youth and low-educated individuals in low-status, dangerous employment with collection and dismantling as the predominant activities.

Table 1: Demographic Characteristic

Age Group	Frequency		
	Agbogloshie	Ashaiman	Total
18 – 24	12	27	39
25 – 34	23	10	33
35 – 44	9	5	14
45 – 54	3		3
55 and above		3	3

Under 18	3	5	8
Total	50	50	100

Level of Education?	Frequency		
	Agbogloshie	Ashaiman	Total
No formal education	11	13	24
Primary	34	26	60
Secondary	5	9	14
Tertiary		2	2
Total	50	50	100

Job Role	Frequency

	Agbogloshie	Ashaiman	Total
Collector	34	36	70
Dismantler	11	9	20
Recycler	2	2	4
Repairer	3	3	6
Total	50	50	100

Monthly Income Range	Frequency		
	Agbogloshie	Ashaiman	Total
GHS 1,000 - GHS 4,999	8	8	16
GHS 100 - GHS 499	19	11	30
GHS 5,000 and above	1	7	8
GHS 500 - GHS 999	22	24	46
Total	50	50	100

Working Hours

The data reveals variation in working hours across the two study locations Agbogbloshie and Ashaiman. In total, 37% of respondents reported working between 4 to 6 hours per day, with slightly more respondents from Agbogbloshie (21%) than Ashaiman (16%) in this category. About 36% of respondents worked 6 to 8 hours per day, which was fairly balanced across locations, with 16% from Agbogbloshie and 20% from Ashaiman. A smaller group (17%) worked less than 4 hours daily, while only 10% worked more than 8 hours per day. These results indicate that while most e-waste workers fall within the 4–8-hour workday range, there is a significant minority exposed to extended or unusually short working periods, both of which may have implications for physical and mental well-being.

Table 2: Working hours

How many hours do you work per day?	Frequency		
	Agbogloshie	Ashaiman	Total
4 - 6 hours	21	16	37
6 - 8 hours	16	20	36
Less than 4 hours	7	10	17
More than 8 hours	6	4	10
Total	50	50	100

Impact of Working Hours on Physical and Mental Well-being

Variations in working hours significantly affect both physical and mental health. Occupational health studies consistently show that long and irregular hours are linked to negative psychological outcomes. Working beyond 55 hours weekly has been strongly associated with higher risks of cardiovascular disease, depression, and anxiety (Virtanen et al., 2018). Conversely, very short or inconsistent working hours can indicate underemployment, often leading to financial instability and psychological insecurity (Park & Jung, 2021). These stressors are especially severe in informal work settings, where job security, benefits, and worker protections are minimal.

For e-waste workers in low-resource environments, these challenges are even more pronounced. Owusu-Sekyere and Agyemang (2022) found that about 77% of workers in West African e-waste hubs reported high perceived stress levels. In their study, longer hours and unpredictable job schedules were major predictors of stress. They also noted that inconsistent shifts, combined with prolonged exposure to environmental toxins, worsened mental health and cognitive performance.

In Agbogbloshie, a major e-waste hub, research by Asampong et al. (2021) identified long working hours as a core part of the hazardous occupational profile. Other risks included extreme heat, ergonomic strain, and social isolation. These observations align with the Job Demand Control Support (JDCS) model (Karasek & Theorell, 1990), which explains that mental health deteriorates when high job demands are not balanced with adequate decision-making autonomy and strong social support.

In the context of e-waste work, extended and irregular hours combined with minimal scheduling structure, limited worker autonomy, and absence of formal protections create a high-strain environment. This setting fosters emotional exhaustion, psychological distress, and reduced capacity to cope with daily demands.

The intersection of hazardous working hours and dangerous job conditions highlights the urgent need for structured occupational health interventions. Potential strategies include implementing regulated shifts to prevent overwork, developing peer-based support networks to enhance social connection, and involving workers in decision-making processes to increase autonomy. Such measures could help reduce stress, improve resilience, and protect the mental well-being of those working in informal e-waste sector

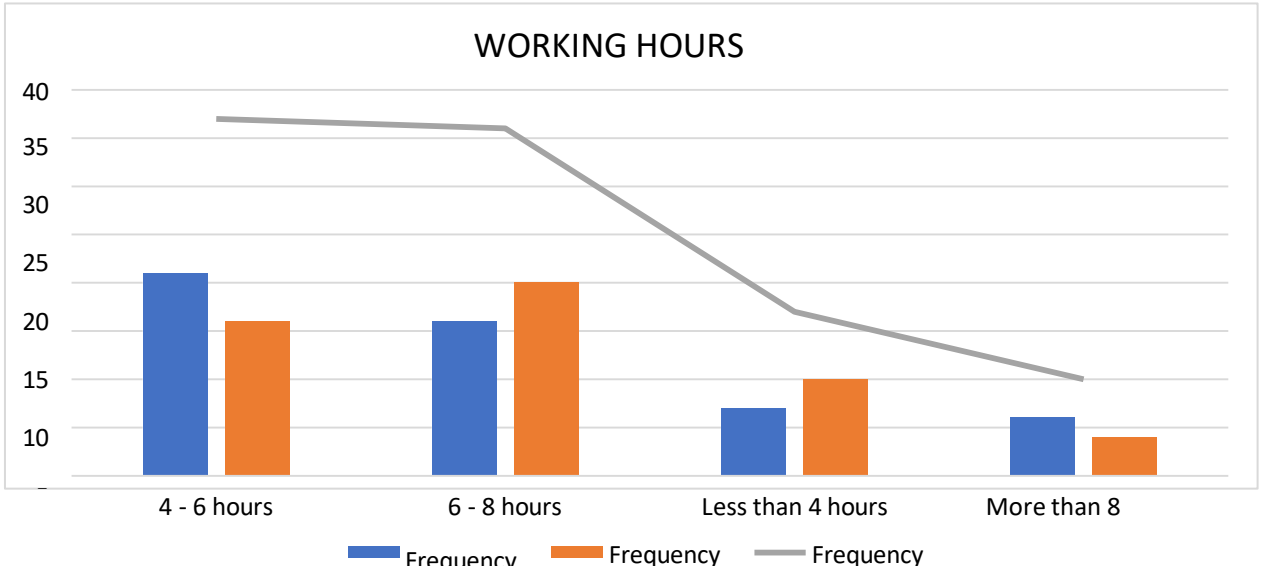
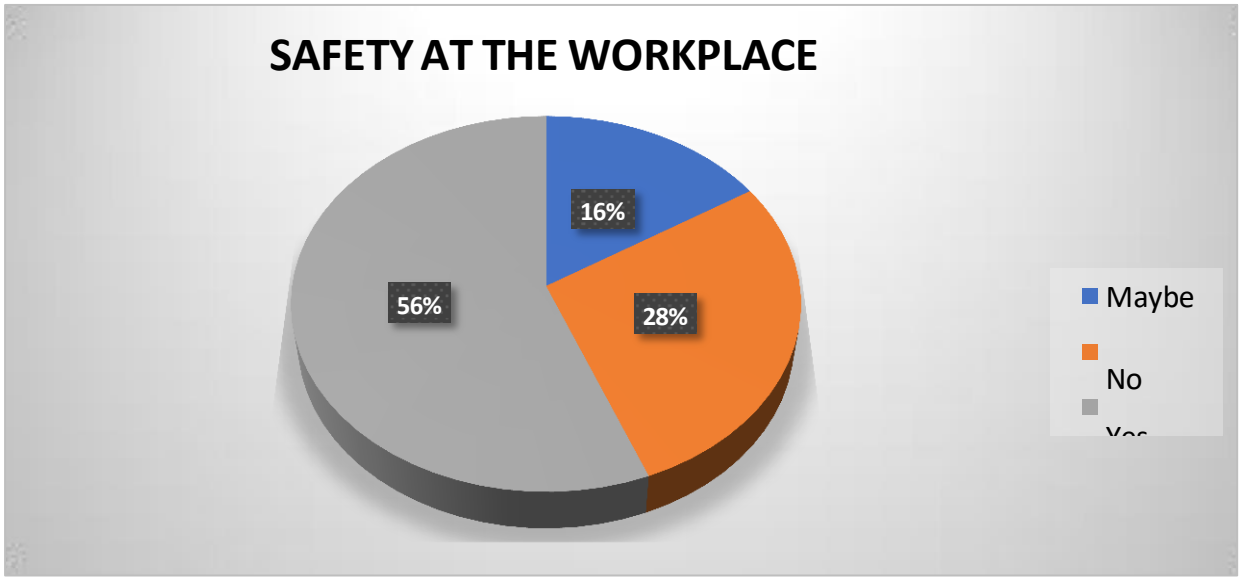


Figure 1: Working hours of respondents

Perceived Workplace Safety

Regarding perceptions of safety at the workplace, 58% of respondents across both locations felt safe, with 28% from Agbogbloshie and 30% from Ashaiman affirming this. However, 29% stated that they do not feel safe at work, including nearly equal numbers from both locations (14 from Agbogbloshie and 15 from Ashaiman). An additional 13% were uncertain, selecting 'Maybe"



Although the majorities feel safe, the relatively high proportions who do not reflects ongoing occupational hazards and the informal nature of the e-waste sector. It also underscores the link between perceived safety and mental well-being.

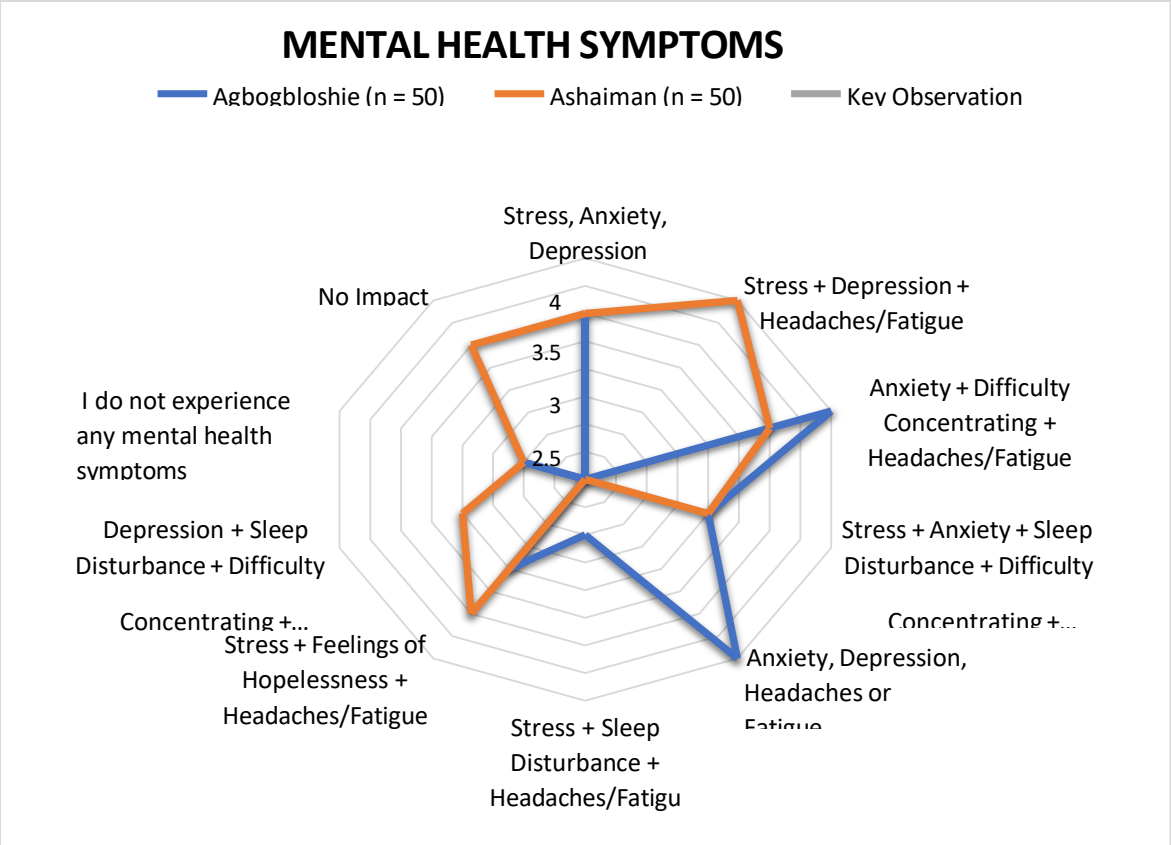
Table 3: Workplace safety

Do you feel safe at your workplace?	Frequency		
	Agbogloshie	Ashaiman	Total
Maybe	8	5	13
No	14	15	29
Yes	28	30	58
Total	50	50	100

Perceptions of Safety and Mental Health in the E-Waste Sector

E-waste workers' perceptions of workplace safety strongly influence their mental health, reflecting wider occupational health research. A poor safety climate shared beliefs about unsafe conditions has been linked to stress, low job satisfaction, and injury risk. In Ghana, studies show inadequate safety awareness, lack of PPE, and harsh conditions such as extreme heat and particulate exposure. Many

workers normalize these hazards, increasing baseline stress. From a Socio-Ecological Model view, absent safety protocols create constant risk, while community acceptance of danger hinders change. Under the Job Demand Control Support model, low safety perception reduces job control, heightening psychological strain when demands are high and support is low. Similarly, a weak Psychosocial Safety Climate where psychological health is undervalued worsens mental health risks. Surveys in Agbogbloshie and Ashaiman revealed that 95% of 100 workers reported at least one mental health issue, highlighting the severe psychological burden inherent in informal e-waste work.



E-waste workers frequently experience multiple, overlapping mental health symptoms. Common clusters included stress, anxiety, and depression (six respondents), and anxiety with concentration problems plus headaches or fatigue (seven respondents). Stress often coincided with sleep disturbances, hopelessness, and fatigue. Agbogbloshie workers reported more complex symptom patterns stress, insomnia, fatigue, and psychological distress while only one reported no symptoms. In Ashaiman, although slightly more workers reported no impact, significant cases of depression, concentration issues, and anxiety persisted, with depression sometimes occurring without stress. Overall, 95% of participants reported at least one symptom, reflecting a heavy psychological burden.

These results align with previous research linking e-waste work to depression, anxiety, and neurobehavioral symptoms, driven by occupational strain and exposure to heavy metals (Owusu-Sekyere & Agyemang, 2022; Parvez et al., 2023). Ibrahim et al. (2015) also documented high PTSD, anxiety, and depression rates among Ghanaian e-waste workers. The frequent symptom overlap

underscores how job strain produces simultaneous emotional, cognitive, and physical challenges (Virtanen et al., 2018). Environmental conditions may explain location differences: Agbogbloshie's extreme heat, pollution, and high demands foster high-strain, low-control environments (Karasek & Theorell, 1990), while Ashaiman's symptoms may reflect slower-developing affective disorders. These patterns fit the Socio-Ecological and Job Demand Control Support models, highlighting multilevel factors shaping workers' mental health risks.

Table 4: Mental health symptoms or challenges

Mental Health Symptom Combination	**Agbogbloshie (n = 50)**	**Ashaiman (n = 50)**	**Key Observation**
Stress, Anxiety, Depression	3	3	Equally reported in both communities, indicating a widespread triad of distress.
Stress + Depression + Headaches/Fatigue	0	4	More common in Ashaiman, suggesting compounded psychosomatic symptoms.
Anxiety + Difficulty Concentrating + Headaches/Fatigue	4	3	A leading combination in both sites; shows high mental workload and burnout.
Stress + Anxiety + Sleep Disturbance + Difficulty Concentrating + Headaches/Fatigue	2	2	Complex, severe symptoms equally shared; could indicate chronic exposure effects.
Anxiety, Depression, Headaches or Fatigue	4	0	Prominent in Agbogbloshie, revealing deeper stress markers in this location.
Stress + Sleep Disturbance + Headaches/Fatigue	1	0	Isolated to Agbogbloshie, though similar symptoms show in Ashaiman under other combos.
Stress + Feelings of Hopelessness + Headaches/Fatigue	2	3	Signifies emotional fatigue; more reported in Ashaiman.
Depression + Sleep Disturbance + Difficulty Concentrating	0	2	Seen only in Ashaiman, indicative of possibly worsening psychological strain.

+ Headaches/Fatigue			
I do not experience any mental health symptoms	1	1	Very few respondents claim no symptoms—supports widespread mental health burden.
No Impact	0	3	A small minority in Ashaiman perceive no mental health effect at all.

In Agbogbloshie, 4 respondents reported never feeling depression, 5 rarely, 9 sometimes, 20 often, and 12 always. This means 64% (32/50) fall into the higher frequency categories (often/always). In Ashaiman, 3 said never, 2 rarely, 4 sometimes, 29 often, and 12 always—indicating 82% (41/50) experience depression frequently or constantly. Overall, 49% of all respondents reported "often" and 24% "always," meaning 73% of surveyed e-waste workers regularly experience depressive symptoms.

These findings reveal a widespread pattern of mental health challenges among e-waste workers, with symptom clusters including stress, anxiety, depression, difficulty concentrating, fatigue, headaches, and sleep disturbances. The prevalence of frequent or constant depression points to significant psychological strain. These patterns align with burnout and job strain syndromes, which manifest through emotional exhaustion, cognitive difficulties, and somatic complaints (Schaufeli & Taris, 2014; Dollard & Bakker, 2010). Burnout overlaps substantially with depression, particularly in exhaustion, cognitive weariness, and emotional depletion (Maslach et al., 2016; Bianchi & Schonfeld, 2023). This is reflected in our data, where stress + depression + headaches/fatigue and anxiety + difficulty concentrating + headaches/fatigue were common combinations.

The high co-occurrence of stress, sleep disturbances, and fatigue especially in Agbogbloshie reflects chronic exposure to hazardous, high-demand environments. Prior studies in Agbogbloshie document elevated stress, noise, and injury risks (Asampong et al., 2018). Similarly, research comparing e-waste workers to bystanders found significantly higher rates of fatigue, psychiatric symptoms, and self-reported drug use among workers (Burns et al., 2021).

Using the Job Demand Control Support model, frequent severe multi-symptom clusters fit the profile of high job demands, low control, and minimal support conditions known to produce burnout-like outcomes, cognitive impairment, and physical exhaustion (Bianchi & Schonfeld, 2023; Virtanen et al., 2018).From the Socio-Ecological Model perspective, these issues reflect overlapping individual exposures (toxins, long hours), organizational deficits (lack of PPE, unsafe practices), and structural drivers (environmental injustice). Agbogbloshie's higher symptom diversity suggests more intense exposure and greater distress than Ashaiman, consistent with research linking elevated hazards to worse mental health (Owusu-Sekyere & Agyemang, 2022). Ultimately, with 64% of Agbogbloshie workers and 82% of Ashaiman workers reporting frequent depression, the prevalence far exceeds

general population rates and resembles those in severely marginalized labor sectors (Parvez et al., 2023).

Table 5: Depression Symptoms

Location	Symptoms of depression due to your work (1 = Never, 5 = Always)					Total
	Never	Rarely	Moderate	Often	Always	
Agbogloshie	4	5	9	20	12	50
Ashaiman	3	2	4	29	12	50
Total	7	7	13	49	24	100

Workplace Risk Factors and Their Influence on Mental Health among E-waste Workers Use of Personal Protective Equipment (PPE)

When asked about the use of Personal Protective Equipment (PPE), 53% of all respondents stated that they use PPE while working, with slightly more PPE users in Ashaiman (29%) than in Agbogbloshie (24%). A significant portion 41% of respondents reported not using any PPE, suggesting a concerning gap in occupational safety practices. Notably, 6% of respondents from Agbogbloshie selected "Maybe," indicating uncertainty or inconsistency in PPE use. The data highlights a critical need for occupational safety training and access to protective gear in both locations, particularly in Agbogbloshie where PPE non-use is slightly more prevalent.

Table 6: Use of Personal Protective Equipment

Use of Personal Protective Equipment (PPE) Row Labels	Frequency		
	Agbogloshie	Ashaiman	Total
Maybe	6		6
No	20	21	41
Yes	24	29	53
Total	50	50	100

Just over half (53%) of e-waste workers reported using personal protective equipment (PPE), while 41% did not use it and 6% used it inconsistently. This reflects longstanding safety gaps in informal recycling. Burns et al. (2018) similarly found low PPE use at Agbogbloshie, noting glove use reduced hand injuries and non-use increased injuries and stress. These findings support recommendations for mandatory safety training and PPE provision (Caravanos et al., 2020).

Inadequate PPE signals low job control and high job demand. Workers unable to safeguard themselves face greater anxiety, burnout, and a sense of helplessness (Karasek & Theorell, 1990). At the individual

level, this increases toxin exposure, injury risk, and fatigue. Organizationally, informal sites lack employer-provided safety measures (Asampong et al., 2021). Societally, weak labor regulations and environmental injustice normalize hazardous work (Oteng-Ababio, 2012).

Studies on domestic waste collectors in Ghana also link low PPE use to higher stress, injuries, and poor safety knowledge (Lissah et al., 2022). Similar findings across informal waste sectors highlight that even basic PPE, combined with training, reduces harm and improves well-being (Zolnikov et al., 2021).

Survey results show all respondents in Agbogbloshie and Ashaiman report some psychological impact from unsafe work conditions. In Agbogbloshie, 54% reported significant impact (level 4) and 32% extreme impact (level 5), with 14% moderate (level 3). Thus, 86% experience high psychological stress from unsafe environments. In Ashaiman, 8% reported mild (level 2), 8% moderate (level 3), 40% significant (level 4), and 44% extreme (level 5) impacts. Overall, 84% reported high psychological effects, closely matching Agbogbloshie's rates. These findings demonstrate that inadequate safety measures not only increase physical risks but also contribute to widespread, severe psychological distress in Ghana's informal e-waste sector.

Location	Unsafe work conditions and psychological well-being? (1 = No impact, 5 = Extreme impact)					Total
	No Impact	Mild Impact	Moderate Impact	High Impact	Extreme Impact	
Agbogloshie	0	0	7	27	16	50
Ashaiman	0	4	4	20	22	50
Total	0	4	11	47	38	100

E-waste workers in Agbogbloshie face significant psychological distress due to hazardous conditions, aligning with Burns et al. (2018). The Socio-Ecological Model and Job Demand Control Support framework highlight how unsafe environments, high demands, low control, and stigma amplify anxiety and burnout. Maneen et al. (2025) note poor safety perceptions worsen distress, with 84–86% reporting high psychological impact, consistent across informal waste sectors. In Agbogbloshie, 56% express job dissatisfaction tied to mental health, though 28% report moderate to high satisfaction, possibly due to resilience or economic necessity. Coping includes social support and faith, but reliance on substances and limited professional help highlight a critical mental health crisis.

Table 8: Job Satisfaction

Job Satisfaction		(1 = Very dissatisfied, 5 = Very satisfied)					Total
		Very dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Very satisfied	
Location	Agbogloshie	5	23	8	10	4	50

	Ashaiman	11	18	15	3	3	50
Total		16	41	23	13	7	100

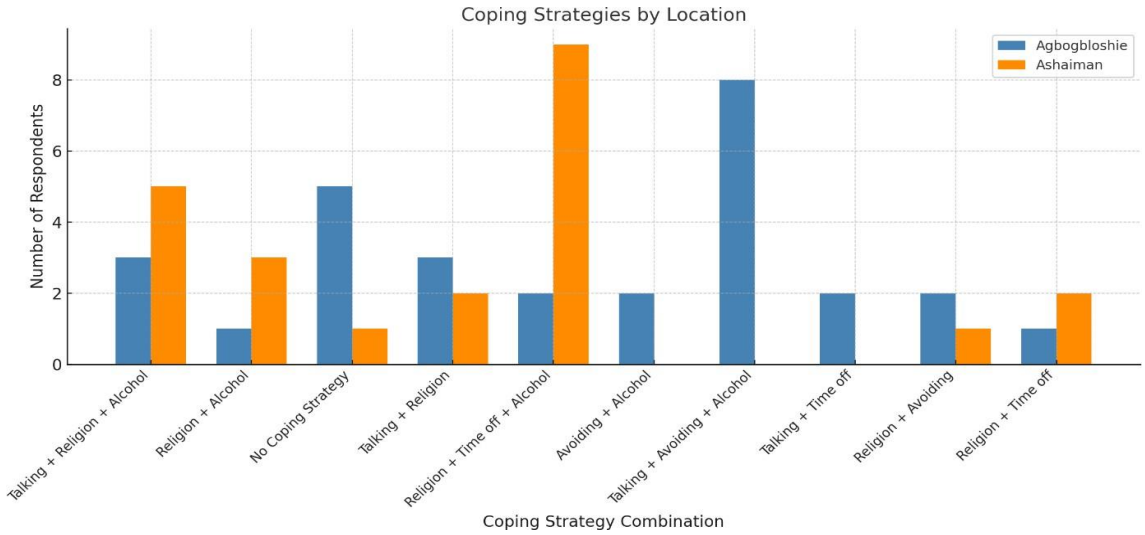
In Ashaiman, levels of dissatisfaction were even higher. A total of 11 respondents (22%) indicated very dissatisfied, and 18 (36%) reported being dissatisfied, making 58% of respondents in Ashaiman fall into the lower satisfaction categories. Furthermore, 15 respondents (30%) chose the neutral option (3), which may suggest indifference or unresolved feelings about their job. Only 3 respondents each selected somewhat satisfied and very satisfied, representing just 6% each.

Looking at the overall total across both sites, 16% of respondents reported being very dissatisfied, and 41% as dissatisfied, meaning that 57% of all e-waste workers surveyed are not satisfied with their job when considering mental health effects. Only 13% expressed some level of satisfaction.

The study reveals significant job dissatisfaction among e-waste workers in Agbogbloshie (56%) and Ashaiman (58%), driven by poor conditions, low pay, irregular roles, and social stigma, consistent with prior research on Ghanaian waste workers. The Job Demand–Control–Support model highlights how high demands, low control, and poor support exacerbate stress. The Socio-Ecological Model shows stressors at individual (toxin exposure, fatigue), organizational (hazardous work), and societal (stigma) levels. Despite this, 13% reported satisfaction, possibly due to social ties or faith. Coping strategies include talking to family, religious practices, and time off, but many rely on maladaptive substance use. In Agbogbloshie, workers combine these methods; in Ashaiman, faith and rest dominate, often with substances. Only one worker sought professional mental health care, indicating limited access. While some show resilience, widespread substance use and lack of formal support highlight a critical mental health crisis. Interventions should integrate culturally sensitive approaches and education to address these challenges effectively.

Table 9: Coping Strategies

Coping Strategy Combination	Agbogbloshie (n = 50)	Ashaiman (n = 50)	Key Observation
Talking to family + Religion + Alcohol	3	5	More prevalent in Ashaiman; suggests reliance on social and spiritual support with substance use.
Religion + Time off + Alcohol	2	9	Significantly higher in Ashaiman, indicating stress-related withdrawal and substance use.
No Coping Strategy	5	1	More common in Agbogbloshie, pointing to a potential lack of awareness or support.
Talking to family + Religion	3	2	Present in both locations, showing balanced use of social and spiritual support.
Avoiding thoughts + Alcohol	2	0	Only found in Agbogbloshie, possibly indicating emotional suppression and self-medication.
Talking to family + Avoiding thoughts + Alcohol	8	0	Predominantly Agbogbloshie; suggests complex but unhealthy coping involving denial and substances.
Religion + Avoiding thoughts	2	1	Modest presence in both locations; suggests spiritual withdrawal as a coping method.
Religion + Time off	1	2	Present in both, slightly higher in Ashaiman; indicates temporary withdrawal and spiritual practice.
Talking to family + Time off	2	0	Agbogbloshie only; shows social reliance and rest-based coping.
Talking to family + Time off + Seeking professional help	0	1	Only one respondent in Ashaiman mentioned professional help, highlighting a major gap in access or awareness.



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Conclusions

This study highlights the mental health crisis among young, low-educated workers in Ghana's informal e-waste sector in Agbogbloshie and Ashaiman. Engaged in hazardous tasks without PPE, they face low wages, long hours, and toxin exposure, leading to depression, anxiety, sleep issues, and poor concentration. Over 80% reported significant psychological distress, worse in Ashaiman. Coping includes religious practices and social support, but some use substances, and only one sought professional help, indicating gaps in mental health access. Low job satisfaction reflects social marginalization. Urgent interventions like safety standards, PPE, and culturally sensitive mental health services are needed.

Policy Implications and Recommendations

The study reveals a mental health crisis among e-waste workers in Agbogbloshie and Ashaiman due to hazardous conditions and poor care access. Urgent policies should enforce safety standards, provide subsidized PPE, limit work hours, and offer community-based safety training. Culturally sensitive mental health services, including counseling and peer support, are vital to reduce stigma.

Future research should explore long-term cognitive and emotional effects of e-waste exposure, the role of faith-based support, and barriers to care. Participatory action research can empower workers to co-create sustainable interventions, addressing systemic neglect while improving well-being and dignity in this workforce

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