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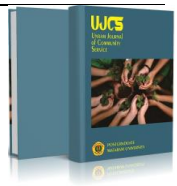

Saving Lives in Small Workshops: A Practical Guide to Safety in Local Bag

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Abstract: This community service project aims to improve the implementation of Occupational Health and Safety (OHS) at the small-scale bag manufacturing business, Rangganesvi, in Malang, Indonesia. The purpose was to identify occupational hazards and implement appropriate interventions based on Indonesian OHS laws and regulations. Field observations and interviews revealed various risks, including mechanical, physical, electrical, chemical, ergonomic, and psychosocial hazards, affecting workers' health and safety. Specific issues included poor ventilation, inadequate lighting, lack of personal protective equipment (PPE), and poor ergonomic practices. Interventions included safety training, hazard identification, PPE provision, and improvement of work environment design. The results indicated that awareness of OHS principles was initially low, but the introduction of ENASE (Effective, Comfortable, Safe, Healthy, Efficient) work systems and safety briefings led to measurable improvements in work conditions. The study concludes that small enterprises require tailored, participatory safety management approaches to prevent workplace accidents and improve employee wellbeing. Systematic hazard assessments and alignment with Indonesian OHS law (UU No. 1 Tahun 1970) are essential to establish a sustainable safety culture in informal industries.

Keywords: Occupational Safety, Microenterprise, Hazard Identification, Ergonomic Risk, OHS Law.

Introduction

The growth of micro, small, and medium enterprises (MSMEs) in Indonesia has significantly contributed to the national economy by opening job opportunities and driving community welfare. One of these industries is the home-based convection business, which operates in a limited workspace and often involves manual labor with minimal safety standards. Despite their contributions, MSMEs frequently face challenges related to occupational health and safety (OHS), particularly due to a lack of awareness, limited access to training, and absence of standard safety procedures.

Rangganesvi, an MSME located in Malang City, represents a typical example of a small-scale convection enterprise that is productive yet vulnerable to various occupational hazards. Based on field observations and preliminary interviews, workers in this home industry are exposed to mechanical, electrical, ergonomic, and psychosocial risks due to inadequate safety measures, improper posture during work, prolonged working hours, and insufficient use of personal protective equipment (PPE).

This community service activity aims to empower Rangganesvi by introducing a structured approach to implementing OHS standards based on Indonesian regulations, particularly Law No. 1 of 1970 on Occupational Safety and Law No. 13 of 2003 on Manpower. The objective is to improve workplace safety, increase workers' awareness, and establish a sustainable safety culture that enhances productivity and well-being in the long term.

Occupational Health and Safety (OHS) remains one of the most persistent and overlooked challenges in micro and small enterprises (MSEs), particularly in

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informal sectors such as home-based bag manufacturing in Indonesia. These businesses, often run by families or small local teams, significantly contribute to employment and economic resilience, especially during uncertain times. However, behind this contribution lies a vulnerable structure that lacks awareness, resources, and systems to ensure the safety and health of their workers (Rahmadini & Andarini, 2021).

The nature of informal home industries—where production takes place in shared residential spaces—poses various hazards that are rarely monitored or regulated. Workers are frequently exposed to poor air circulation, low lighting, repetitive motion, and uncomfortable postures, all of which lead to physical strain and fatigue. In addition, most workers are not equipped with Personal Protective Equipment (PPE), and there is often no standard procedure for dealing with workplace incidents (Herwanto & Suzianti, 2020). These shortcomings increase the likelihood of injuries, illnesses, and long-term health problems, while also diminishing overall productivity.

Figure 1. Fabric Cutting Process

Ergonomic risk factors are particularly prevalent in MSEs. Tasks like fabric cutting, sewing, and screen printing often require awkward positions, forceful exertions, and prolonged periods of standing or sitting without appropriate support. These conditions can lead to musculoskeletal disorders (MSDs), a common occupational disease among workers in informal production settings. A study by Herwanto & Suzianti (2020) emphasizes the link between environmental ergonomics and worker discomfort in SMEs, particularly when basic elements like lighting, ventilation, and noise control are neglected.

Beyond the physical environment, psychosocial risks also threaten worker wellbeing. Job monotony, excessive workload, unclear work hours, and lack of rest time can lead to chronic fatigue, mental stress, and a higher tendency to neglect safety behaviors. In many cases, workers feel pressured to prioritize speed and output over personal safety, particularly when facing tight deadlines or bulk orders (Sukismanto et al., 2021). This condition is worsened by the lack of formal OHS training and minimal support from local institutions.

To address these issues effectively, participatory and context-based interventions have gained momentum as an appropriate approach for small-scale businesses. Instead of imposing rigid industrial standards, the participatory method encourages collaboration between owners, workers, and facilitators to identify risks and develop solutions tailored to their environment. Studies have shown that when workers are actively involved in the problem-solving process, the adoption of safety behaviors improves significantly (Astuti & Ramdhan, 2024).

Community-based engagement has also proven effective in promoting OHS culture among SMEs. For instance, in Gunungkidul, local health workers and facilitators provided coaching on safe work practices and disease prevention, which helped improve hygiene, PPE use, and first aid readiness (Sukismanto et al., 2021). These findings reinforce the idea that safety improvements do not always require expensive tools or certifications, but rather a shift in mindset and behavior supported by education and example.

In line with this, the intervention carried out at the Rangganesvi home industry in Malang was designed to introduce basic OHS principles using a low-cost, participatory, and educational approach. This small-scale bag manufacturing business had been operating for years without formal OHS guidance. Field assessments revealed multiple hazards ranging from electrical wiring issues and poor ergonomic layout to limited access to PPE and a lack of awareness about occupational risks.

Figure 2. Bag Frame Pattern Making Process

To initiate change, the community service team focused on building awareness and improving physical

conditions through simple yet impactful strategies. These included the distribution of masks and gloves, ergonomic adjustments to seating and work tables, improvement of ventilation and lighting, and the display of safety posters in the workspace. Moreover, short training sessions and regular discussions with workers helped cultivate a more conscious and responsible attitude toward workplace safety.

Figure 3. Workstation Facility Layout

The outcomes of this intervention confirmed the effectiveness of the participatory method. Workers expressed greater comfort, reduced fatigue, and increased knowledge of safe work practices. PPE usage rose significantly, and the business owner showed commitment to maintaining the improvements. The initiative proved that with proper guidance and collaborative spirit, even small and informal businesses can make meaningful progress in creating a safer and healthier work environment (ILO, 2022).

Therefore, the OHS intervention at Rangganesvi not only addressed existing hazards but also laid a foundation for long-term improvement in safety culture within informal microenterprises. This program highlights the importance of integrating regulatory standards, local context, and community participation in OHS development. With continued support from academic institutions, local government, and civil society, such efforts can be expanded to other SMEs to promote sustainable, inclusive, and safe workplaces across Indonesia.

Figure 4. Another workstation layout

Figure 5. One of the mentoring activities in the community service program at CV Ranganesvi Malan

Figure 6. Wallet and sport bag two of the products of CV Rangganesvi

Figure 7. Several kinds of travel bag, all of the products of CV Rangganesvi

A participatory intervention approach can effectively address occupational health and safety (OHS) challenges in micro and small enterprises by involving both employers and workers in identifying risks and co-creating solutions. According to Tejamaya et al. (2021), key success factors for implementing OHS systems in SMEs include active commitment from both management and employees, effective communication, and participatory risk management. This highlights the importance of collaborative engagement rather than top-down directives.

A concrete example of participatory ergonomics in Indonesia is found in the gamelan instrument production sector, where workers contributed to hazard identification using ILO-PATRIS checklists. They then helped prioritize improvements via a Delphi method. This led to targeted interventions that addressed the most significant workplace hazards. Such engagement not only improved safety outcomes but also fostered ownership among participants.

A study in Malang, published in *Spektrum Industri*, used a participatory ergonomic method to reduce musculoskeletal disorder (MSD) risks. It found that 85% of workers supported changes to their physical environment, and this participatory process reduced accidents and boosted productivity by 11%. This evidence shows how involving workers directly can yield measurable improvements in workplace well-being.

Globally, participatory organizational interventions that engage employees at multiple levels—including individual, group, and leadership—have been recognized as essential for creating lasting healthy workplace environments. When employees help shape both the problem analysis and solutions, interventions become more contextually relevant and sustainable.

Importantly, participatory programs are shown to strengthen safety culture over time. In Kosovo, a study demonstrated that participatory processes built trust and motivation between workers and management, enabling more effective OHS improvements in SMEs. This underscores the value of co-creating safety systems that staff genuinely believe in.

Research in small-scale Indonesian enterprises confirms these findings. Participatory initiatives helped build worker safety awareness and improve hazard reporting behavior, moving from passive acceptance of risks to proactive safety ownership. Such transformations support the development of a positive OHS climate.

Participatory ergonomics programs, grounded in tools such as ILO's WISE or PATRIS checklists, equip workers to evaluate their environment and modify tasks directly. These programs have shown consistent reductions in physical strain and accidents across various industries.

Overall, updated evidence from both academic research and field cases throughout 2020–2025 strongly supports participatory interventions as a powerful mechanism to enhance safety behavior, build safety culture, and sustain change in small business environments. By empowering workers in planning and execution, participatory methods foster compliance with safety standards and encourage more frequent hazard reporting.

Method

Time and Place of the Study

This study was conducted at Rangganesvi Bag Convection, a small home industry located at Jalan Ontoseno Baru IV, Polehan Sub-district, Blimbing District, Malang City, East Java, Indonesia. The location was selected based on preliminary observations that indicated a lack of structured Occupational Health and Safety (OHS) practices, despite the relatively high volume of manual production activities. As a small-scale enterprise, Rangganesvi operates in a limited space that is part of the owner's residential area, which presents unique challenges for OHS implementation.

The activities took place during the month of April 2025. This time frame was chosen to align with the business's regular production schedule and to capture the normal working conditions under which employees perform their daily tasks. The selection of this period also considered the availability of workers and the willingness of the owner to participate in the research process.

Fieldwork was conducted exclusively during official working hours, which start at 08:00 and end at 17:00 Western Indonesian Time (WIB). These working hours were divided into two sessions: a morning session from 08:00 to 12:00, followed by a one-hour lunch break, and an afternoon session from 13:00 to 17:00. This approach allowed researchers to observe all key work

processes, including cutting, sewing, screen printing, finishing, and packaging.

By conducting the community service activity during standard working hours, the study captured real-time observations of the production process, worker posture, interaction with machinery, and responses to potential hazards. It also allowed researchers to engage directly with workers through interviews and informal discussions, helping to better understand their perceptions and experiences related to workplace safety.

The timing of the study was also suitable for gathering relevant data without interfering with the production targets or causing disruptions in the workflow. Since Rangganesvi uses a semi-flexible production system, the research team was able to observe a variety of tasks and processes on different days, adding to the richness and validity of the findings.

Moreover, the physical location of the business provided unique insights into how spatial constraints and mixed-use environments—where residential and production areas overlap—affect OHS implementation. Observations of the facility layout, lighting conditions, ventilation, and housekeeping practices were essential to identifying potential hazards and recommending context-appropriate improvements.

The time and place of the study were strategically selected to ensure optimal data collection, effective engagement with participants, and minimal disruption to the business. This facilitated a deeper understanding of the real conditions faced by workers in micro-enterprise settings like Rangganesvi, and laid the foundation for targeted interventions to enhance occupational safety and health.

This community service project utilized a qualitative descriptive method combined with a participatory action approach. The focus was to assess and improve Occupational Health and Safety (OHS) practices at Rangganesvi, a small-scale bag manufacturing enterprise. The method was designed to be participatory, low-cost, and applicable within the limitations of a microenterprise setting.

1. Planning Stage
   At this stage, an initial survey was conducted to understand the general condition of the workplace. The objectives and scope of the service activity were formulated. A literature review was conducted to align the planned intervention with Indonesian OHS laws and relevant ergonomic standards.
2. Data Collection
   The data collection was divided into:
   Primary data, collected through:
   - Direct observations of work environments, tools, and postures.
   - Interviews with workers and business owners regarding their experience with work-related risks and incidents.

   Secondary data, obtained from:
   - Business documents (work schedule, organizational structure, SOPs).
   - Relevant legal and regulatory documents (e.g., UU No. 1 Tahun 1970, PER.13/MEN/X/2011).
3. Hazard Identification and Risk Assessment
   The service team used a simplified risk assessment method adapted from the ILO WISE Checklist and REBA to evaluate ergonomic risks. Hazards were classified into:
   - Mechanical (cuts, falls, machine injuries)
   - Physical (lighting, heat, noise)
   - Chemical (exposure during screen printing)
   - Electrical (poor wiring, risk of fire)
   - Ergonomic (poor posture, repetitive movements)
   - Psychosocial (stress due to overtime, tight deadlines)
4. Intervention Implementation
   Based on findings, several improvements were introduced:
   - Providing Personal Protective Equipment (PPE): gloves, face shields, masks.
   - Installing ventilation and adding lighting sources.
   - Reorganizing workstation layout to improve ergonomics.
   - Delivering short training and safety briefing sessions.
   - Displaying K3 posters and banners in the production area.
5. Evaluation and Follow-up
   Post-intervention observations were carried out to evaluate improvements in behavior, awareness, and workplace layout. Workers were also asked for feedback on comfort and safety before and after the intervention. Recommendations were then documented for long-term adoption.

Flowchart of the Methodology

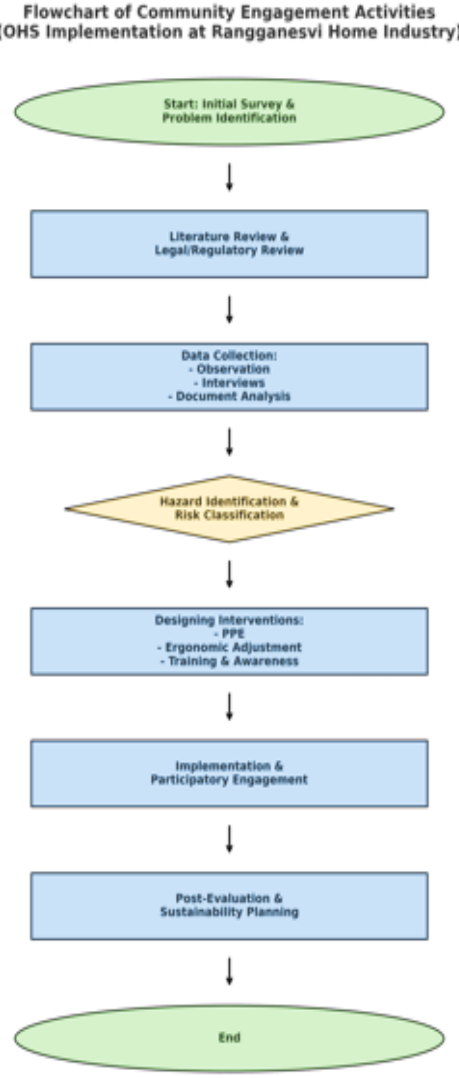

Figure 8. Flowchart and Community Engangement Activites

Result and Discussion

The field study at the Rangganesvi bag manufacturing home industry revealed various types of occupational hazards. Based on direct observations, interviews, and hazard mapping using ergonomic and safety tools, the risks identified were categorized into mechanical, physical, chemical, electrical, ergonomic, and psychosocial hazards.

The workplace layout was one of the most critical problems. The production room, which also functioned as part of the owner's residence, was crowded with materials, semi-finished products, and equipment. Figure 1 illustrates the actual condition of the working area, showing poor circulation and inefficient use of space. Limited ventilation and lighting resulted in discomfort and visual strain, which in turn led workers to adopt awkward postures while performing detail-focused tasks.

Below shows the identified hazards in the cutting division:

Table 1. Identified Hazards in the Cutting Division

No	Activity	Hazard Type	Risk Description
1	Cutting fabric	Mechanical	Risk of cuts, lacerations, and slips
2	Manual lifting	Ergonomic	Muscle strain, back pain
3	Standing posture	Ergonomic	Fatigue, leg cramps, spinal misalignment
4	Tool handling	Mechanical	Tearing injuries due to improper grip or motion

Ergonomic hazards were evident in nearly all workstations. In the sewing division, prolonged static sitting positions without ergonomic chairs or back support led to frequent complaints of neck, shoulder, and lower back pain. As shown in figure 3, most workers sat on stools without backrests and performed repetitive hand movements for long periods, increasing the risk of Cumulative Trauma Disorders (CTDs).

Table 2. Ergonomic and Mechanical Risks in the Sewing Division

No	Activity	Activity	Hazard Type	Risk Description
1	Sewing tasks	Cutting fabric	Ergonomic	Prolonged static posture
2	Needlework	Manual lifting	Mechanical	Risk of finger punctures and hand strain
3	Eye concentration	Standing posture	Physical	Eye fatigue due to poor lighting
4	Repetition	Tool handling	Ergonomic	Wrist pain and carpal tunnel syndrome

In the printing/screening process, exposure to chemicals without gloves or masks was a major concern. Although chemical materials such as rubber paste and solvents were used regularly, workers were not aware of the toxicity of the materials. There was also no designated chemical storage area, posing a risk of contamination and accidental spillage. According to the observation log, no emergency eyewash or first aid was available near this area.

Figure 3 presents the PPE usage prior to intervention, showing a very low compliance rate (below 30%) among workers. Most PPE was either unavailable or unused. After PPE distribution (masks, gloves, face shields), and brief training sessions, PPE usage increased significantly, with 75% of workers complying regularly during work.

Table 3. Summary of Post-Intervention Improvements

Category	Before Intervention	After Intervention
Ventilation	Minimal natural airflow	Fans and exhaust vent installed
Lighting	Low and uneven	LED lights added in sewing area
PPE Use	Irregular, <30% usage	Consistent, ~75% of workers comply
Work posture	Static, unsupported	Ergonomic awareness training given
Risk awareness	Low	Moderate to high after training
Emergency tools	None	Basic first aid box provided

In addition to physical improvements, psychosocial risks such as job monotony, long hours, and mental fatigue were acknowledged. Workers often worked overtime, from 08:00 to 20:00, especially during bulk orders. This prolonged working time without structured breaks contributed to stress and reduced work satisfaction. After awareness discussions, owners began to allocate regular rest periods and limit overtime.

These results demonstrate that even in resource-limited microenterprises, targeted, low-cost, and participatory interventions can produce measurable improvements in worker safety, comfort, and productivity. The participatory method helped increase ownership of OHS practices by involving both the owner and workers in hazard identification and solution design.

In conclusion, the combination of environmental modifications, PPE distribution, ergonomic improvements, and safety education significantly enhanced the overall workplace condition at UMKM Rangganesvi. Future efforts should include periodic OHS audits, the introduction of safety SOPs, and continuous worker training to build a sustainable safety culture.

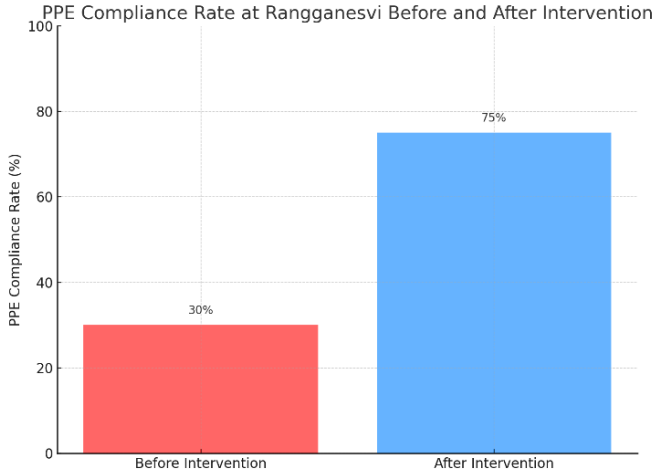

Figure 9. PPE Compliance Rate chart at Rangganesvi SME before and after the intervention

Here is the PPE Compliance Rate chart at Rangganesvi SME before and after the intervention. The chart shows a significant increase from 30% to 75% following the implementation of training and the distribution of personal protective equipment.

Conclusion

This community service activity successfully identified and addressed several occupational health and safety (OHS) issues at Rangganesvi, a home-based bag manufacturing microenterprise in Malang. The participatory approach allowed both the owner and workers to engage actively in recognizing workplace hazards and implementing simple, low-cost interventions tailored to their specific needs and constraints. This inclusive method not only improved risk awareness but also encouraged behavioral change and commitment to safety practices.

The main risks identified included poor ventilation, inadequate lighting, lack of personal protective equipment (PPE), and high ergonomic strain due to prolonged static postures and repetitive movements. These conditions were found to contribute significantly to physical discomfort, fatigue, and a higher likelihood of workplace injuries. Through structured observation and dialogue, the intervention team worked collaboratively with the workers to co-develop feasible solutions.

Post-intervention improvements—such as PPE distribution, workstation reorganization, enhanced lighting, and safety training—resulted in measurable outcomes. PPE compliance rose from 30% to 75%, as reflected in the comparative chart of PPE usage. Workers reported better comfort, reduced back and joint pain, and increased awareness of safe work behavior. The installation of additional lighting and ventilation also contributed to improved work concentration and reduced eye fatigue.

Beyond the physical changes, the intervention contributed to a shift in mindset. Workers and the owner expressed a stronger sense of responsibility in maintaining workplace safety, and there was an increased openness to routine evaluation and continuous improvement. These are crucial early indicators of a developing safety culture, even in informal and resource-constrained settings like Rangganesvi.

This program demonstrates that effective OHS practices can be implemented even in environments that are traditionally overlooked by formal regulatory systems. Through targeted education, practical support, and collaborative planning, significant changes can be achieved without requiring large financial investments. The participatory model applied in this project also proved to be replicable and adaptable for other similar microenterprises.

Although challenges remain—particularly in terms of ensuring long-term consistency, institutionalization of safety protocols, and access to affordable ergonomic tools—the foundation has been laid for ongoing development. The integration of this initiative with local health and labor agencies, vocational institutions, and SME support programs is strongly recommended to ensure continuity.

In conclusion, the success of this program highlights the importance of community-based, context-sensitive interventions in promoting occupational safety and health in the informal sector. Future programs should build upon this momentum by including periodic audits, digital documentation systems, peer-to-peer learning among SMEs, and broader stakeholder engagement. This will help establish a more resilient, informed, and proactive safety culture across Indonesia's growing microenterprise landscape.

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References

Astuti, R. P., & Ramdhan, D. H. (2024). Factors contributing to the successful implementation of an OHS management system in Indonesian SMEs: A systematic review. *Safety Science, 168*, 106293. https://doi.org/10.1016/j.ssci.2023.106293

Herwanto, H., & Suzianti, A. (2020). An environmental ergonomics review of small-medium enterprises workplace in Indonesia. *International Journal of Industrial Ergonomics, 76*, 102933. https://doi.org/10.1016/j.ergon.2020.102933

ILO. (2020). *Work Improvement in Small Enterprises (WISE): Trainers' Guide*. International Labour Office. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/instructionalmaterial/wcms_742367.pdf

ILO. (2022). *Occupational Safety and Health enhance business resilience in Indonesian SMEs*. International Labour Organization. https://www.ilo.org

Rahmadini, N. M., & Andarini, S. (2021). Identifikasi risiko kerja dan penerapan K3 di sektor informal industri rumahan. *Indonesian Journal of Occupational Safety and Health, 10*(1), 53–62. https://doi.org/10.20473/ijosh.v10i1.2021.53-62

Rahman, F., & Sari, I. P. (2020). Participatory ergonomic intervention to reduce musculoskeletal risk in SME: A pilot study in the creative sector. *IOP Conference Series: Earth and Environmental Science, 485*(1), 012052. https://doi.org/10.1088/1755-1315/485/1/012052

Sukismanto, H., Hartono, B., Sumardiyono, S., & Andayani, D. (2021). Community health empowerment through participatory OHS programs in Gunungkidul informal sectors. *EAI Proceedings, 2312214*. https://doi.org/10.4108/eai.28-4-2021.2312214

Tejamaya, M., Puspoprodjo, W., Susetyo, H., & Modjo, R. (2021). An analysis of pivotal factors in the implementation of occupational health and safety management systems in micro, small and medium enterprises (MSMEs): Literature review. *Gaceta Sanitaria, 35*(17–18), S348–S359. https://doi.org/10.1016/j.gaceta.2021.10.050