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ORIGINAL ARTICLE

Effectiveness of leaflet and video interventions in promoting disease prevention behaviors among online motorcycle taxi drivers in Medan City

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ABSTRACT

Online motorcycle taxi drivers represent informal sector workers who are at high risk of experiencing various health problems, such as musculoskeletal disorders, respiratory issues, and occupational stress, due to exposure to pollution, non-ergonomic working postures, long working hours, and unsafe road conditions. This study aims to identify the characteristics of online motorcycle taxi drivers in relation to the improvement of disease prevention behaviors. The research employed a quantitative approach with a non-randomized pretest–posttest control group design. The study population consisted of all online motorcycle taxi drivers operating in the Universitas Prima Indonesia area, with a total sample of 60 participants. They were divided into two groups: 30 respondents who received health education through leaflet media (intervention group) and 30 respondents who received education through video media (control group), selected using a non-probability sampling technique. Among respondents in the leaflet group, the majority were aged 19–44 years (93.3%), had a high school education (76.7%), had worked for less than five years (63.3%), worked more than eight hours per day (73.3%), and used automatic motorcycles (53.3%). Similarly, in the video group, most respondents were aged 19–44 years (90%), had completed high school (63.3%), had worked for less than five years (76.7%), worked more than eight hours per day (73.3%), and used automatic motorcycles (63.3%). Online motorcycle taxi drivers are part of the informal workforce with high health risks, highlighting the need for preventive efforts through educational interventions. The study findings indicate that the majority of respondents in both the leaflet and video groups were young adults with high school education, short work tenure, long working hours, and predominantly used automatic motorcycles. These characteristics can serve as a basis for designing more targeted health interventions to enhance disease prevention behaviors.

Keywords: age, education, work tenure, working hours, type of motorcycle

Introduction

In recent years, the online motorcycle taxi sector in Indonesia has experienced remarkable growth, driven by increasing public demand for fast and efficient transportation services.[1] According to data from the Asosiasi Pengemudi Ojek Online Indonesia (Indonesian Online Motorcycle Drivers' Association), the number of online motorcycle taxi drivers exceeded one million in 2022. Although this profession offers flexible working hours and accessibility, drivers often face various health-related challenges.[2,3] A preliminary survey conducted among drivers operating around Universitas Prima Indonesia revealed that one of the most common health problems is back pain caused by non-ergonomic sitting postures and a lack of

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stretching activities. A study found that 65% of online motorcycle taxi drivers reported musculoskeletal pain after working for more than eight hours per day. In addition, drivers are at high risk of traffic accidents, with data indicating that they are more likely to experience injuries compared to other vehicle operators.[4]

The surrounding environment also significantly affects the health of online motorcycle taxi drivers.[5] They are frequently exposed to high levels of air pollution, particularly in densely populated urban areas with heavy traffic congestion.[6] Moreover, their work often requires them to operate under extreme weather conditions such as heavy rain or intense heat, leading to physical fatigue and increasing the risk of illness.[7] Unsafe road conditions, careless drivers, and other obstacles further elevate the risk of road accidents, which may cause serious injuries and have long-term mental health effects, including trauma and anxiety.[8–10] Online motorcycle taxi drivers frequently adopt unhealthy lifestyles, including irregular eating habits and limited physical activity.[9,11] These issues are worsened by irregular working schedules, leaving little time for rest or exercise. High work pressure and limited social support contribute to psychological problems, with research showing that anxiety and depression levels among drivers increase with heavier workloads.[9,12]

Although the government has established several policies to protect informal workers, including online motorcycle taxi drivers, implementation remains limited due to low awareness and weak institutional support from ride-hailing companies.[13] Previous studies have investigated the relationship between occupation and health conditions among online motorcycle taxi drivers; however, few have examined the factors contributing to disease occurrence in this group comprehensively.[14] This study aims to determine the effect of health education using leaflet media on disease prevention among online motorcycle taxi drivers in Medan City.

Method

This study employed a quantitative approach using a quasi-experimental design, specifically a non-randomized pretest–posttest control group design. The research was conducted at Universitas Prima Indonesia, Medan, with baseline data collection initiated on April 7, 2025. The study population consisted of 60 online motorcycle taxi drivers operating in the vicinity of Universitas Prima Indonesia, Medan, in 2025. The sampling technique used was total sampling, in which the entire population (60 respondents) was included as research participants. The sample was divided into two groups: 30 respondents in the experimental group who received educational interventions using leaflets, and 30 respondents in the control group who received educational interventions through video media. Inclusion criteria were active online motorcycle taxi drivers at the study location, aged 20–60 years, willing to participate in all stages of the study (pretest, intervention, and posttest), and able to read. Respondents were excluded if they did not complete the questionnaire or withdrew during the study process.

The research process began with a preliminary survey, the development of educational media (leaflets and videos), and administrative approval procedures. Both groups were given a pretest questionnaire to assess baseline knowledge, attitudes, and practices regarding disease prevention. Immediately following the pretest, the experimental group received the leaflet intervention, while the control group received the video-based intervention. After each intervention, both groups completed a posttest questionnaire. Primary data were collected through behavioral observations, in-depth interviews, and structured questionnaires measuring the independent variables—knowledge, attitudes, and practices—on an ordinal scale. Secondary data were obtained from relevant theses and scientific journals. All completed questionnaires underwent editing, coding, and scoring before data processing and analysis using SPSS software.

Univariate analysis was applied to describe the frequency distribution of each variable. Bivariate analysis was conducted to evaluate changes in scores before and after the intervention using the Shapiro–Wilk normality test (for samples <50), followed by an independent t-test (for normally distributed data) or the Wilcoxon test (for non-normally distributed data). The effectiveness of the intervention was further assessed using the N-Gain Test.

Results

This study involved 60 respondents who worked as online motorcycle taxi drivers within the Universitas Prima Indonesia area in Medan. Participants were randomly assigned into two intervention groups: the leaflet media group (N=30) and the video media group (N=30). Descriptive analysis of respondent characteristics (summarized in Table 4.1) indicated that the majority in both groups were within the productive age range of 19–44 years, comprising 93.3% in the leaflet group and 90.0% in the video group.

Most respondents had completed senior high school education (76.7% in the leaflet group and 63.3% in the video group). A notable difference was observed in terms of work experience: 63.3% of respondents in the leaflet group had worked for less than five years, whereas 76.7% in the video group had worked for five years or more. Despite these differences, both groups showed an identical proportion of working hours, with 73.3% in each group working more than eight hours daily.

Table 1. Summary of respondents' demographic characteristics (n=60)

Characteristic	Category	Leaflet Group (N=30) F (%)	Video Group (N=30) F (%)
Age	19–44 years	28 (93.3%)	27 (90.0%)
	>45 years	2 (6.7%)	3 (10.0%)
Education	Senior High School	23 (76.7%)	19 (63.3%)
	Diploma/Bachelor's Degree	7 (23.3%)	11 (36.7%)
Work Experience	<5 years	19 (63.3%)	7 (23.3%)
	≥5 years	11 (36.7%)	23 (76.7%)
Working Hours	<8 hours/day	8 (26.7%)	8 (26.7%)
	>8 hours/day	22 (73.3%)	22 (73.3%)
Type of Motorcycle	Automatic	16 (53.3%)	19 (63.3%)
	Non-automatic	14 (46.7%)	11 (36.7%)

Before the intervention, baseline assessments were conducted on knowledge, attitudes, and practices. In the leaflet group, the median pre-test scores were 23 for knowledge, 24 for attitude, and 27 for practice. In the video group, the median pre-test scores were 22, 24, and 20 for knowledge, attitude, and practice, respectively. The Kolmogorov-Smirnov normality test revealed that most post-test variables, particularly knowledge and attitude scores (leaflet knowledge p=0.004; video knowledge p=0.000; video attitude p=0.000), were not normally distributed ($p < 0.05$). Consequently, non-parametric statistical tests were employed for further analyses.

The Wilcoxon Signed-Rank Test was used to compare pre- and post-intervention scores within each group (Table 4.2). Results indicated significant improvements across all behavioral indicators in both intervention groups. In the leaflet group, significant differences (p=0.000) were observed between pre- and post-test scores for knowledge, attitude, and practice. The video group also showed significant improvements (p=0.000) in all three variables, indicating that both educational media were effective in influencing behavior change.

Table 2. Wilcoxon signed-rank test results (Pre-test vs. Post-test)

Variable	Group	p-value (Pre vs. Post)	Description
Knowledge	Leaflet	0.000	Significant
Attitude	Leaflet	0.000	Significant
Practice	Leaflet	0.000	Significant
Knowledge	Video	0.000	Significant
Attitude	Video	0.000	Significant
Practice	Video	0.000	Significant

Furthermore, a significant association was identified between the respondent's history of receiving complementary feeding and their current nutritional status ($p = 0.033$). The group that was not given complementary feeding (n=23) was dominated by individuals with good nutritional status (n=21). In contrast, the group that was given complementary feeding (n=17) demonstrated greater variation in nutritional status, including cases of severe malnutrition (n=1), overweight (n=3), and obesity (n=4).

Table 3. N-Gain analysis of behavioral changes between leaflet and video groups

Variable	Group	Mean N-Gain (%)	Min N-Gain	Max N-Gain
Online Motorcycle Taxi Drivers' Preventive Behavior	Leaflet	50.261	−25.00	100
	Video	79.448	0	100

Discussion

The findings of this study indicate that educational interventions using either leaflet or video media significantly improved the knowledge, attitudes, and practices of online motorcycle taxi drivers in disease

prevention. The pre-test and post-test analyses (Wilcoxon Test) confirmed statistically significant differences ($p = 0.000$) across all three variables in both groups. These improvements can be explained through the stages of health behavior change. Prior to the intervention, respondents' knowledge regarding disease prevention was relatively limited, leading to suboptimal preventive attitudes and behaviors. The provision of new information through education effectively enhanced respondents' cognitive domain of knowledge, consistent with the findings of Parisi et al.[15] who also reported a significant post-intervention improvement in knowledge scores.

The increase in knowledge subsequently influenced attitudes (affective domain). When respondents comprehended the risks and benefits of healthy behaviors, changes in perception and awareness fostered more positive attitudes. This finding aligns with studies which demonstrated that health education can effectively engage the affective domain—heightening awareness and motivation for behavioral change.[16,17] These shifts in attitude ultimately translated into concrete behavioral transformations (conative domain), such as the consistent use of masks, carrying hand sanitizers, and maintaining vehicle hygiene. This process corresponds with Notoatmodjo's Health Behavior Change Theory, which emphasizes that knowledge and attitude are critical antecedents of deliberate action. Both media types facilitated this process: leaflets, as described by Fathinatusholihah et al.[16] served as written reinforcements that could be reread, while videos, as noted by Yuliasih et al.[17] fostered empathy and emotional engagement through compelling visualizations.

Although both media proved effective, the comparative analysis (Mann–Whitney Test) revealed significant differences in their impact. Video interventions consistently outperformed leaflets in enhancing knowledge ($p = 0.000$), attitudes ($p = 0.000$), and behaviors ($p = 0.011$). This difference in effectiveness was quantified through N-Gain analysis, which classified the video medium (score = 79.448) as "highly effective," whereas the leaflet medium (score = 50.261) was categorized as "less effective."

The superiority of video media can be attributed to its audiovisual nature. This finding is consistent with Ihlasuyandi and Sudiyat[18] and Saleh et al.[19] who emphasized that audiovisual media (AVA) stimulate multiple senses—sight and hearing—making the information more engaging, comprehensible across educational levels, and memorable. Communicative and attractive media enhance the effectiveness of health education. In contrast, leaflets are more passive and require higher literacy levels and reading interest, which aligns with field observations showing respondents' limited engagement with written materials.[20,21]

The characteristics of the target group further reinforce these findings. As dynamic informal workers with limited time, online motorcycle taxi drivers need concise, accessible, and easily digestible information. Video media, as supported by Saputra and Isnaeni[22] and Ernawati[23], can deliver concrete simulations and visual examples, facilitating imitation and practice. Successful health interventions, as highlighted by Wilson et al.[24], must go beyond knowledge transfer to address motivational and emotional aspects. Therefore, the selection of appropriate media—tailored to audience characteristics—is a crucial determinant of health promotion success. For field-based workers such as online motorcycle taxi drivers, video media serve as a markedly more effective and impactful tool for health education.

Conclusion

Both leaflet and video-based health education interventions significantly improved the knowledge, attitudes, and preventive behaviors of online motorcycle taxi drivers in Medan City ($p = 0.000$). However, the video medium demonstrated superior effectiveness, with a higher N-Gain score (79.448%) compared to leaflets (50.261%). The audiovisual features of video media enhanced participants' comprehension, engagement, and behavioral retention, making it a more suitable health promotion tool for dynamic worker populations with limited time and varied literacy levels. These findings highlight the importance of selecting context-appropriate media to optimize the outcomes of public health education interventions.

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