THE EFFECT OF LEPTOSPIROSIS HEALTH INTERVENTION MODULE ON KNOWLEDGE AND ATTITUDES IN INFORMAL SECTOR WORKERS IN SEMARANG CITY (INTERVENTION STUDY IN THE WORKING AREA OF KEDUNGMUNDU HEALTH CENTER SEMARANG)

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Keywords:	ABSTRACT
effect,leptospirosis, workers	Leptospirosis is a zoonotic disease caused by the bacterial genus Leptospira, and a worldwide public health problem caused by climatic and environmental conditions. The incidence of lepotopsirosis in Central Java has always increased in the last two years, namely in 2021 there were 285 cases with a death rate of 44 people (CFR: 16.60%) cases, in 2022 there were 503 cases with a death rate of 70 cases (CFR: 13.32 %). The aim of this research is to analyze the differences before and after administering the leptospirosis health intervention module on knowledge, attitudes, beliefs and practices among informal sector workers in Semarang City (intervention study in the Kedungmundu Semarang health center working area). The research design used a control intervention study with a sample of 45 interventions and 45 controls. The intervention and control groups were determined based on the results of leptospirosis cases found in the working area of the Kedungmundu Community Health Center, Semarang City in 2020 - 2023. Data analysis was carried out univariately, bivariately using the Wilcoxon test and the Mann-Withney test. The results showed that knowledge ($p<0.001$), attitude ($p=0.001$). The mean differences between the intervention and control groups were 62.11 and 28.89 for knowledge, 63.86 and 27.14 for attitudes. The Leptospirosis Health Intervention Program is an effective health program, an educational tool to increase awareness and preventive behavior among at-risk groups such as informal sector workers, farmers and livestock breeders

INTRODUCTION

Leptospirosis is a zoonotic disease caused by the bacterial genus Leptospira, and a worldwide public health problem caused by climatic and environmental conditions. Humans become infected through contact with urine (or other body fluids, except saliva) from infected animals, such as rodents, dogs, pigs, cows, horses, raccoons, and wild animals, or contact with water, soil, or food contaminated with the urine of infected animals. Human-to-

human transmission is extremely rare. The incubation period is usually 7–10 days, with a range of 2–30 days (WHO, 2022).

According to the World Health Organization (WHO), leptospirosis is one of the Neglected Tropical Diaseases (NTDs), but can have significant health impacts in tropical countries such as Asia and America. Cases of leptospirosis in humans in the world each year are estimated to reach 1 million cases with 60 thousand deaths. The incidence of leptospirosis is also estimated to be 1,000 times more in tropical countries than in subtropic countries (Zakharova OI, Korennoy FI, Toropova NN, Burova OA, 2020).

Cases of leptospirosis are emerging as an important health problem, although reports of outbreaks are rare (Mohapatra et al., 2022). Cases tend to have a seasonal distribution, increasing with precipitation or high temperatures. Transmission usually occurs through direct exposure to the urine of infected animals or through environmental exposures (WHO, 2022).

Leptospirosis is a health problem in Indonesia, especially areas that are prone to flooding (Sakundarno, Bertolatti, Maycock, Spickett, & Dhaliwal, 2014). The profile of the Indonesian Ministry of Health in 2021 stated that there were 734 cases of Leptospirosis in Indonesia reported by eight provinces, namely DKI Jakarta, West Java, Central Java, Yogyakarta, East Java, Banten, North Kalimantan, and East Kalimantan. Of the reported cases, there were 84 cases of death with a Case Fatality Rate (CFR) of 11.4%. Although compared to 2020, there was a decrease in the number of cases from 1,170 to 734 cases in 2021 (Rachmawati, Adi, & Nurjazuli, 2023). The CFR increased from 9.1% to 11.4%. Although the CFR nationwide is increasing, the average CFR of provinces reporting cases is likely to be lower than in 2020 (Wang et al., 2021). The provinces of East Java, Banten, North Kalimantan, and East Kalimantan reported an increase in cases (Aisyah et al., 2020). Meanwhile, a significant decrease in cases occurred in DKI Jakarta, West Java, Central Java, and Yogyakarta Provinces (Pasaribu, Mukhaiyar, Huda, Sari, & Indratno, 2021). Despite showing a decrease in cases, Central Java Province reported high cases in 2021 (Rendana & Idris, 2021). The provinces of East Java and Central Java are the largest contributors to all cases in Indonesia, at 42.5% and 36.1% respectively (Kemenkes RI, 2022).

Leptospirosis so that there is a delay in bringing the patient to a health facility (Semarang, 2021).

Informal sector workers are workers who work in all kinds of jobs without state protection and for these businesses are not taxed (Benjamin, Beegle, Recanatini, & Santini, 2014). Informal sector workers such as laborers are considered as manual workers (blue collar) as workers in jobs that rely on physical strength (Nankongnab, Silpasuwan, Markkanen, Kongtip, & Woskie, 2015). Informal workers are at risk of developing leptospirosis due to exposure to contaminated environments in their workplaces. Humid conditions and abundant food supplies are suitable for rodent infestations, which are the main reservoirs of human leptospirosis (Ulfah, Anies, Sakundarno, Setyawan, & Suwondo, 2016).

RESEARCH METHODS

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This type of research is a quantitative research using quasi-experimental methods with a form of nonequivalent pretest-posttest design with control group design to compare dependent variables between the intervention group and the control group, this study is used to examine the effect of leptospirosis health intervention with modules on knowledge, attitudes, beliefs and practices in informal sector workers in the work area of the Kedungmundu Health Center in Semarang City. Levels of knowledge, attitudes, beliefs and practices were measured using questionnaires before and after the intervention. The analysis in this study was used to determine the difference in the level of knowledge before and after the intervention. This study used the Wilcoxon test if the data were not normally distributed. The Mann-Whitney test was used to compare the intervention group and the control group. Data analysis will be processed with a computer program (SPSS).

RESULTS AND DISCUSSION
Characteristics of the subject of study

Based on the established method, a total of 90 research subjects were selected as research subjects to determine the effect of the leptospirosis health intervention module on knowledge, attitudes, beliefs, and practices in informal sector workers in Semarang City (intervention study in the working area of the Kedungmundu Semarang health center). The intervention group of 45 people and the control group of 45 people came from areas with a high incidence of leptospirosis in the working area of the Kedungmundu Health Center, namely in Sendangguwo and Tandang.

Table 1. Characteristics of the study subject (n = 90)

Subject Characteristics	Intervensi		Kontrol	
	N	%	N	%
Jenis Kelamin				
Man	20	44.4 %	19	42.2 %
Woman	25	55.6 %	26	57.8 %
Age				
18 – 25 year	0	0.0 %	0	0.0 %
26 – 35 year	7	15.6 %	1	2.2 %
36 – 45 year	17	37.8 %	16	35.6 %
46 – 55 year	18	40.0 %	26	57.8 %
56 – 65 year	3	6.7 %	2	4.4 %
Education				
No School	2	4.4 %	0	0.0 %

Subject Characteristics	Speakers		Control	
	N	%	N	%
SD	9	20.0 %	6	13.3 %
SMP	13	28.9 %	12	26.7 %
SMA	21	46.7 %	27	60 %
Work				
Farmer	5	11.1 %	12	26.7 %
Breeder	39	86.7 %	33	73.3 %
Jenis Kelamin				
Man	20	44.4 %	19	42.2 %
Woman	25	55.6 %	26	57.8 %
Age				
18 – 25 years	0	0.0 %	0	0.0 %
26 – 35 years	7	15.6 %	1	2.2 %
36 – 45 years old	17	37.8 %	16	35.6 %
46 – 55 years old	18	40.0 %	26	57.8 %
56 – 65 years old	3	6.7 %	2	4.4 %
Education				
No School	2	4.4 %	0	0.0 %
SD	9	20.0 %	6	13.3 %
SMP	13	28.9 %	12	26.7 %
SMA	21	46.7 %	27	60 %
Work				
Farmer	5	11.1 %	12	26.7 %
Breeder	39	86.7 %	33	73.3 %
Garden Worker	1	2.2 %	0	0.0 %

It is known that the number of respondents who received intervention with the female sex was 20 people (44.4%) and male respondents were 25 people (55.6%). For the control group, the number of respondents with female gender was 19 people (42.2%) and

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male respondents were 26 people (57.8%). More study subjects were aged more than or equal to 46 – 55 years (control 57.8% and intervention 40%).

Based on the results of the study, data on the characteristics of research subjects were obtained including gender, age, occupation, and education (Ipa, Widawati, Laksono, Kusrini, & Dhewantara, 2020). Of the 90 study subjects, the majority of subjects were female (Nelson et al., 2022). The distribution of respondents by gender showed that the percentage of respondents who received intervention with the female sex was 20 people (44.4%) and male respondents were 25 people (55.6%) (Flynn, Cama, & Scott, 2022). For the control group, the number of respondents with female gender was 19 people (42.2%) and male respondents were 26 people (57.8%). The distribution of respondents by age showed that the percentage of maypritas study subjects was more than or equal to 46 – 55 years (control 57.8% and intervention 40%). The risk of the adult age group (20-59 years) is higher in men than women, and in the elderly group (>60 years) the risk of men and women for leptospirosis is the same. In old age (geriartry) there is degeneration of body organs which results in decreased organ function so that the body's homeostatic ability decreases and increases the risk of physiological disorders that are systemic and pathognomonic. Decreased function of various organ systems associated with age also contributes to impaired immunity. Eventually, as we age, the skin will become thin and not so elastic anymore. Peripheral neuropathy and accompanying decreased sensibility and circulation can give rise to static ulcers, decubitus, excoriation and burn symptoms. Skin integrity disorders are predisposing factors that make it easier for older people to experience microorganism infections that are part of normal skin flora (Ulfah et al., 2016).

Differences in knowledge and attitudes about Leptospirosis Before and After Intervention

Table 2. Differences in knowledge and attitudes about Leptospirosis Before and After Intervention (intervention group)

Variable	N	Negative Ranks	Positive Ranks	Ties	p-value
Knowledge	45	0	37	8	< 0.001
Sikap	45	1	42	2	< 0.001

Based on table 8 interpretation of output ranks at negative ranks or the difference (negative) between knowledge results for Pre-test and Post-test, there are 0 negative data, which means that no respondents experience a decrease in knowledge results from Pre-test and Post-test scores. In positive ranks or the difference (positive) between the knowledge results for Pre-test and Post-test, there are 37 positive data, which means that 37 respondents experienced an increase in knowledge results from Pre-test and Post-test scores. While the Ties value is 8, so it can be said that there are 8 values that are the same between Pre-test and Post-test. It is known that the significant results of the Wilcoxon Test amounted to < 0.001 because the p value < 0.05, it can be concluded that the hypothesis is accepted which means that there are differences in knowledge before and after being given the leptospirosis health intervention module to informal sector workers in Semarang City.

Based on table 8 interpretation of output ranks on negative ranks or the difference (negative) between attitude results for Pre-test and Post-test, there is 1 negative data which means that 1 respondent experienced a decrease in attitude results from Pre-test and Post-test scores. In positive ranks or the difference (positive) between attitude results for Pre-test and Post-test, there are 42 positive data, which means that 42 respondents experienced an increase in attitude results from Pre-test and Post-test scores. While the Ties value is 2, so it can be said that there are 2 values that are the same between Pre-test and Post-test. It is known that the significant results of the Wilcoxon Test amounted to < 0.001 because the p value < 0.05, it can be concluded that the hypothesis is accepted which means that there are differences in attitudes before and after being given the leptospirosis health intervention module on informal sector workers in Semarang City.

Table 3. Differences in knowledge and attitudes about Leptospirosis initial measurement and final measurement (control group)

Variabel	N	Negative Ranks	Positive Ranks	Ties	p-value
Pengetahuan	45	12	2	31	0.051
Sikap	45	19	1	25	0.065

Based on table 3 interpretation of output ranks at negative ranks or the difference (negative) between knowledge results for Pre-test and Post-test, there are 12 negative data, which means that 12 respondents experienced a decrease in knowledge results from Pre-test and Post-test scores. In positive ranks or the difference (positive) between the knowledge results for Pre-test and Post-test, there are 2 positive data which means that 2 respondents experience an increase in knowledge results from Pre-test and Post-test scores. While the Ties score is 31, so it can be said that there are 31 values that are the same between Pre-test and Post-test. It is known that the significant results of the Wilcoxon Test amounted to < 0.051 because the p value > 0.05, it can be concluded that the hypothesis was rejected which means that there is no difference in knowledge before and after being given the leptospirosis health intervention module to informal sector workers in Semarang City.

Based on table 3 interpretation of output ranks on negative ranks or the difference (negative) between attitude results for Pre-test and Post-test, there are 19 negative data, which means that 19 respondents experienced a decrease in attitude results from Pre-test and Post-test scores. In positive ranks or the difference (positive) between attitude results for Pre-test and Post-test, there is 1 positive data which means that 1 respondent has increased attitude results from Pre-test and Post-test scores. While the Ties value is 25, so it can be said that there are 25 equal values between Pre-test and Post-test. It is known that the significant result of the Wilcoxon Test of 0.065 due to the p value > 0.05, it can be concluded that the hypothesis is rejected which means that there is no difference in attitude before and after being given the leptospirosis health intervention module to informal sector workers in Semarang City.

Differences in Knowledge and Attitudes about Leptospirosis in the Intervention Group and Control Group

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Knowledge and Attitude Differences between the intervention group and the control group with the non-parametric test of the Mann Whitney Test (abnormally distributed data). Here are the results of the Mann Whitney Test:

Table 4. Differences in Knowledge and Attitudes about leptospirosis in the intervention group and control group (n = 90)

Variabel	Kelompok	N	Mean Ranks	p-value
Pengetahuan	*Post-test* Kelompok Intervensi	45	62.11	< 0,001
	Post-test Kelompok Kontrol	45	28.89	
Sikap	*Post-test* Kelompok Intervensi	45	63.86	< 0,001
	Post-test Kelompok Kontrol	45	27.14	

Based on the table known in the knowledge variable of the significant results of the Mann Whitney Test of < 0.001 due to p value < 0.05, it can be concluded that there is a difference in knowledge between the intervention group and the control group, so it can also be concluded that there is an influence of leptospirosis health intervention module on knowledge in informal sector workers in Semarang City. Knowledge on the subdomain "prevention methods" showed that most respondents knew how to prevent leptospirosis infection primarily by avoiding contact with rats and keeping home and workplace safe, avoiding wading through floodwater, drinking and eating safe food and water, and wearing appropriate protective equipment. Knowledge of the proper use of personal protective equipment (PPE) plays an important role in preventing disease. Health education with the method of direct lectures to residents needs to be done, because it can find out the actual condition of residents and the environment if done by direct review. Activities can be carried out by conducting health counseling related to leptospirosis such as environmental health counseling, and efforts to prevent leptospirosis (Ulfah et al., 2016).

In the attitude variable, the significant results of the Mann Whitney Test amounted to < 0.001 due to p values < 0.05, it can be concluded that there are differences in knowledge between the intervention group and the control group, so it can also be concluded that there is an influence of leptospirosis health intervention module on attitudes in informal sector workers in Semarang City. The positive attitude of the people in the study area is likely due to sufficient knowledge about the path of disease transmission encouraging people to have a positive preventive attitude. Knowing the symptoms of leptospirosis also makes it easier for respondents to know when to see a doctor because they know the severity of the disease. It also shows that the health sector is doing a good job in reaching out to the public to disseminate information about diseases such as leptospirosis.

CONCLUSION

The variable knowledge of the significant results of the Mann Whitney Test is < 0.001 because the p value < 0.05, it can be concluded that there is a difference in knowledge between the intervention group and the control group.

The attitude variable of the significant results of the Mann Whitney Test is < 0.001 because the p value < 0.05, it can be concluded that there is a difference in knowledge between the intervention group and the control group, so it can also be concluded that there is an influence of leptospirosis health intervention module on attitudes in informal sector workers in Semarang City.

The Leptospirosis Health Intervention Program has been shown to be effective in improving knowledge scores and attitudes regarding leptospirosis among informal sector workers. This tool can be used for health education among risk groups, especially wet market workers, to improve their health, awareness regarding leptospirosis and prevention practices against this disease.

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