Identifying characteristics and causes of women injuries in Sleman: 2016-2019 HDSS data

Ida Bagus Gede Surya Putra Pidada[1], Dewanto Yusuf Priyambodo[1], Budiatri Retno Noormaningrum[1]

Abstract

Purpose: To describe the demographic characteristics, injury characteristics, and factors causing injury, as well as the relationship between demographic characteristics and injury characteristics, and between demographic characteristics and factors causing injury to women in Sleman Regency. **Methods:** This research is an observational analytic study using data from 1027 respondents of HDSS Sleman with a cross-sectional design. **Results:** Most of the subjects were over 46 years old (52.4%), married (54.9%), the last education was senior high school (SLTA) or equivalent (34.7%), homemakers (24.4%), and live in urban areas (80.7%). The most common injuries were minor injuries (66.8%), with the location of the incident on the highway (47.5%). All injuries were *unintentional*, with the most being motorcycle accidents (28.8%). Analysis of age and location of residence with injury characteristics showed a statistically significant relationship (p=0.000). The test results of all demographic characteristics with factors causing injury did not establish a statistically significant relationship. **Conclusion:** Demographic characteristics of injured women in Sleman are mostly over 46 years old (52.4%), married (54.9%), have high school education or equivalent (34.7%), working as housewives (24.4%), and live in urban areas (80.7%). Most of the locations where the injury occurred were on the highway (47.5%). Characteristics of the most frequent injuries were minor injuries (66.8%), and the most common factor causing *unintentional* injuries was motorcycle land transportation accidents (28.8%). There is a relationship between the characteristics of the age and location of women in Sleman with the injury category. There is no relationship between all demographic characteristics of women in Sleman with factors causing injury.

Keywords: causative factor; characteristics; demographics; injury; woman

INTRODUCTION

Injury is physical damage to the human body caused by an intolerable and unpredictable force [1]. Meanwhile, according to Potter & Perry (2005), injury is damage to normal anatomical structures and functions caused by pathological conditions [2].

The World Health Organization (2009) reports that every year around the world, more than 1.2 million people die on the roads, and as many as 20.-50 million people suffer non-fatal injuries. Most (more than 90%) of these deaths occur in low- and middle-income countries [3]. In Indonesia, based on the 2018 National Basic Health Research (Riskesdas) data, there was an increase in the prevalence of injuries by 10.2% when compared to 2013. The prevalence of injuries in 2018 was 18.4%, consisting of 7.4% women and 11% male [4]. However, the proportion of causes of injury in the form of falls and injuries in Indonesia is higher in women than in men [5]. As women's education and employment increase in Indonesia, the proportion of injuries in general to women may also increase in the future.

Injuries caused by violence experienced by women or women are also increasing. This can be seen from the results of the National Women's Life Experience Survey, which states that as many as 33.4% of women in Indonesia have experienced physical and/or sexual violence in their lives [6].

The fifth of the *Sustainable Development Goals* (SDGs) is to ensure gender equality and empower women. This goal is targeted to [1] end all forms of discrimination against women everywhere, [2] eliminate all forms of violence against women in public and private spaces, including trafficking in persons and sexual exploitation, as well as various other types of exploitation. Through the targets set in the SDGs, gender equality and women's empowerment will be realized. Women will have equal access and control over education, health, economy, and other life resources. Women's access and control in the space for their lives can be demonstrated through the role and involvement of women in health, education, economics, politics, and other fields [7].

Factors causing injury to women are generally caused by internal and external factors. Internal factors mean from yourself because of age, strength, health, anatomy, and psychology. External factors are caused from outside, for example, due to impact or other violence. Many preventive measures have been taken to reduce the possibility of injury to a person. However, the rate of injury experienced by women tends to increase. In the Special Region of Yogyakarta (DIY), based on data from the Regional Development Planning Agency (Bappeda) DIY, injuries due to accidents tend to increase from 2016 to 2019. Likewise, in the Sleman Regency area, cases of injuries suffered by women have increased [8].

Based on research by Mariana & Dewi (2017), serious injuries caused by traffic accidents in Sleman Regency are more common in women (14.05%) than men (10.45%) [9]. Many prevention efforts have also been carried out, but the rate of injury continues to increase. Therefore, it is necessary to conduct a study that describes a complete injury profile, especially regarding identifying the characteristics of injuries experienced mainly by women and the factors that cause injuries to women in the Sleman Regency. By knowing the description of the characteristics and factors causing injury to women in the Sleman area, it is hoped that more appropriate preventive efforts can be made so that the prevalence of injury to women, especially in Sleman Regency, can decrease.

METHODS

This study is a descriptive-analytic observational study with a cross-sectional design. The population of this study is HDSS data for women in the Sleman area who suffered injuries in 2016, 2017, and 2019. The subjects of this study were HDSS data for women in the Sleman area from 1027 respondents who suffered injuries in 2016-2019, with inclusion criteria of women aged 12 years and above, and the exclusion criteria were incomplete HDSS data. A sampling of this research with method *non-random sampling,* namely *total sampling.*

The independent variable in this study is the demographic characteristics of women in the Sleman Regency. The dependent variable is the characteristics of the injury and the factors causing the injury. Operational definitions of the demographic characteristics of women referred to in this study include age, education, occupation, location of residence, and place of injury. Age, according to the Ministry of Health (2009), is grouped into adolescents (12-25 years), adults (26-45 years), and old age (> 46 years) [10]. The last education is divided into junior high school (SMP), high school (SMA), college (PT) or equivalent, and no school. Occupations are categorized into Civil Servants (PNS), private employees, police, Indonesian Army (TNI), housewives (IRT), and not working. The location of residence consists of rural and

urban areas. The scene is where the injury occurred, such as at school, home, work, or the road.

Injuries are classified as minor if there are only abrasions and bruising, moderate injury if the wound is torn, sprained, or stretched, and severe if there is a concussion, fracture, or disability. Factors causing injury consist of *unintentional*, namely due to accidental traffic accidents, falls, burns, animal attacks, and poisoning, as well as causes *intentional* or consisting of violence, self-injury/suicide attempts.

This study uses secondary data in the form of data that has been collected by the HDSS team of Sleman Regency in the cycles of 2016, 2017, and 2019. After obtaining permission from the research ethics committee, the researchers processed the data by tabulating and conducting descriptive and statistical analysis—the statistical test used as *chi-square*.

RESULTS

Table 1 shows that 52.4% of respondents are over 46 years old, with 54.9% married. The most recent education of the respondents is SMA/SMK/MA (34.7%). Most occupations are housewives (24.4%), with the most residential locations in urban areas (80.7%). The most common injuries experienced by respondents were minor injuries (66.8%), with the most frequent site of injuries being on roads (47.5%), and the most frequent cause of injury was motorcycle land transportation accidents (28.8%).). Most of the time, there was no information regarding the cause of injury, followed by negligence or unintentional at 27.7%.

Table 1. Demographic characteristics

Demographic Characteristics	Total n = 1027	
	Frequency	Percentage
Age (years)		
Teens (12-25)	237	23.1
Adults (26-45)	252	24.5
Elderly (> 46)	538	52.4
StatusMarried		
Not Married	256	24.9
married	564	54.9
Divorced	71	6.9
Widowed	131	12.8
Education		
photo / preschooler	132	12.9
SD / MI	178	17.3
Junior / MTS	163	15.9
SLTA /SMK/MA	356	34.7
D2/D3	40	3.9
D4/S1	123	12.0
Masters Degree/S3	7	0.7
Don't know	28	2.7
Occupation		
Not working	170	16.6
Housewives	251	24.4
PNS	29	2.8
SOE employees	1	0.1
Private employees	114	11.1
Entrepreneurs/traders	143	13.9
Service providers	38	3.7
Farmers	32	3.1
Labor	99	9.6
Retired	22	2.1
Students	110	10.7
Others	18	1.8
Location of residence		
Rural	198	19.3
Urban	829	80.7
Characteristics of injury		
Minor injury		
Yes	686	66.8
No	341	33.2
Moderate injury		
Yes	210	20.45
No	817	79.55
Serious injury		
Yes	267	25, 99
Locations of events		
Home environment	424	41.3
School environment	20	1.9
Sports venues	1	0.1
Highways	488	47.5
Business/service/office/public places um	40	3.9
Industrial and construction areas	2	0.2
Agricultural area	45	4.4
Others	6	0.7
Causes of Injury		
Motorcycle land transportation accidents	296	28.8
Other land transportation accidents	80	7.8
Falls (slips, falls from a height)	202	19.7
Exposure to sharp/objects blunt/machinery	18	1.8
Burning/hot water/chemicals	10	1.0
Biting/stinging/attacking by animals	4	0.4
Falling/throwing	9	0.9
Poisoning	1	0, 1
Other	5	0.5
Unknown/missing data	430	39.2
Cause of injury due to condition		
Crime action/occurrence	5	0.5
Negligence/accidental	284	27.7
Others	1	0.1
No information	737	71.8

Table 2 shows the elderly respondents suffered minor injuries (46.64%). Respondents who suffered the most injuries were those who had the last education in the form of secondary education or equivalent (39.24%), worked as housewives (18.79%), and lived in urban areas (60.37%). The place where the most injuries occurred was on the highway (36.61%). Overall, the most common injury characteristics were minor injuries. The results of the variable test between age characteristics and injury characteristics, as well as

between residence characteristics and injury characteristics, obtained p=0.000, which means that there is a statistically significant relationship. Meanwhile, the results were not statistically significant for education, occupation, and place of injury with the features of the injury (p>0.05).

Table 2. Injury characteristics to demographic

Characteristics demographic	Characteristics injury characteristics (%)			p
	Mild	Mode-rate	Severe	
Age				0.000*
Adolescent	17.13	5.55	0.39	
Adults	11.97	12.17	0.39	
Elderly	46.64	5.25	0.49	
Education				0.702
No school	8.56	4.18	0.1	
Primary	12.27	4.96	0.1	
Secondary	39.24	3.01	0.97	
Higher	13.63	2.82	0.1	
Don't know	2.04	0.68	0	
Employment				0.229
Not working	11.88	4.48	0.29	
Housewives	18.79	5.25	0.39	
Civil	1.85	0.97	0	
Servants BUMN	0.1	0	0	
Employees	8.37	2.43	0.29	
Private employees/ entrepreneurs/ trading	10.71	3.21	0	
Services	2.73	0.97	0	
Farmer	2.33	0.68	0.1	
Workers	6.9	2.63	0.1	
Retirement	1.95	0.19	0	
Student	8.67	1.95	0.1	
Other	1.46	0.29	0	
Location of residence				0.000*
Rural	12.46	3,79	0.1	
Urban	60.37	19.18	1.16	
Scene injury				0.339
Link.House	31.65	9.44	0.19	
Link. Schools	1.46	0.49	0	
Sports	0	0.1	0	
Highways	36.61	9.83	0	
Business areas/ services/ offices/ public areas	2.82	1.07	0	
Industrial and construction areas	0.1	0.09	0	
Agricultural areas	2.43	1.95	0	
Other	0, 58	0	0	

*p < 0.05 significant

Table 3. Data overview of factors causing injury to demographic characteristics

Demographic Characteristics	Factors causing injury (%)		p
	Intentional	*Unintentional*	
Age			0.221
Adolescent	0	23.1	
Adults	0	24.5	
Elderly	0	52.4	
Education			0,877
No school	0	12.9	
Primary	0	17.3	
Secondary	0	50.6	
Higher	0	16.6	
Don't know	0	1.4	
Employment			0.934
Not Employed	0	16.6	
Housewives	0	24.4	
PNS	0	2.8	
SOEEmployee	0	0.1	
Private Employees	0	11.1	
Self	0	13.9	
Service Waiter	0	3.7	
Farmers	0	3.1	
Labor	0	9.6	
Retired	0	2.1	
Student	0	10.7	
Other	0	1.8	
Location of residence			0.490
Rural	0	19.3	
Urban	0	80.7	
Scene injury			0.950
Link.House	0	19.3	
Link. School	0	0	
Highway	0	19.3	
Workplace/other public places	0	0	
Don't know	0	0	

Factors causing Injury: *intentional* (violence, self-injury/suicide attempt) self), *unintentional* (traffic accident, fall, burn, animal attack, poisoning).
*P<0.05 significant.

Based on Table 3, This study. In contrast, the results were not statistically significant. We can see that all the observed demographic characteristics, namely age, education, occupation, location of residence, and place of injury associated with the cause of injury, obtained 100% results due to *unintentional* factors. However, the variable test results between age characteristics and injury-causing factors got p = 0.221, meaning there is no statistically significant relationship. The education variable with the factors causing the injury brought p = 0.887, which means no

statistically significant relationship. The work variable with the factors driving the injury received p = 0.934, which means no statistically significant relationship. Variable location of residence with factors causing injury obtained p = 0.490, which means that there is no statistically significant relationship. The injury scene with the factors driving the injury received p = 0.950, which means no statistically significant relationship.

DISCUSSION

This study found that injuries to women in Sleman were mainly experienced by the elderly. Most injuries were minor injuries and had a statistically significant relationship if it was associated with injury characteristics. Suppose it is related to the factors causing the injury. In that case, it is obtained entirely due to unintentional factors. Still, it does not have a significant relationship, consistent with *the World Health Organization* (WHO) estimates that the injury caused by accident is more common than injuries due to deliberate actions. Injuries to older women in Sleman are caused mainly by motorcycle accidents and falls. However, previous studies have shown that injuries from traffic accidents in Sleman generally occur in young men [8]. Injury to older women in Sleman is more due to falls. Old age will cause changes in physical and psychological conditions, which in turn will affect daily activities. One of the physical problems that often result in morbidity and mortality in the elderly is falls. Previous research states that with age, the risk of falling will increase [11]. The process of degeneration in the elderly will reduce flexibility, vision, and balance, thereby increasing the risk of falling [11,2].

The majority of respondents had the last education in the form of secondary education. If it was associated with the factors causing the injury, it was found that the injuries suffered by women in Sleman all occurred due to unintentional factors with mild injury characteristics, but there was no statistically significant relationship. Previous research has found that most injuries occur in highly educated people [8]. Internal and external factors cause injuries. Internal factors come from innate human beings, such as knowledge, gender, level of intelligence, emotional motivation, and physical characteristics. In contrast, external factors exist in the surrounding environment, such as the physical, social, cultural, economic, and political environment [12]. So, internal factors such as knowledge and level of intelligence obtained from education affect the occurrence of injuries. The higher

a person's education, the easier it is to receive information, and in the end, research results, the more knowledge he has. Conversely, if the level of education is low, it will hinder the development of a person's attitude towards information and new values that are introduced [13].

Most of the respondents are housewives. Suppose it is related to the factors causing the injury. In that case, the injuries suffered by women in Sleman are entirely due to unintentional factors with mild injury characteristics, but there is no statistically significant relationship. Vuuren stated that women's jobs are cooking at home, sewing, shopping, ironing clothes, and taking care of children [14]. The research in Surakarta concluded that household duties have no economic exchange value, so they tend to be underestimated [15]. This assumption makes homemakers feel less valuable. The tasks of a housewife tend to be monotonous and cause stress because the work is almost the same every day in the same location, and also tends to be isolated from the outside world. Research in Bali claimed that domestic work is one of the three main stressors in housewives [16]. Stressors have the potential to increase the risk of injury.

The majority of respondents live in urban areas. Suppose it is associated with the incidence of injury-causing factors. In that case, the injuries experienced by women in Sleman are entirely due to factors *unintentional* or accidental characteristics of minor injuries. A significant relationship is obtained, in line with a study showing injuries from motorcycle accidents in Sleman are higher in urban areas than in rural areas [8], because of higher use of motorbikes and mobility in urban than in rural areas [17]. However, although it is less common, it turns out that injuries that occur in villages are more likely to die than injuries that occur in cities [17]. The difference in risk is probably due to the difficulty of accessing adequate rescue facilities. Research in the United States found that vehicular collisions caused more than twice as many deaths in the least densely populated areas in the most densely populated areas [18]. People from rural areas were likely to accelerate the vehicle at high speed because the roads were relatively solid [18].

Based on the scene, most injuries occur on the highway. Suppose it is associated with the factors causing the injury. In that case, the injuries suffered by women in Sleman are entirely due to unintentional factors with the characteristics of minor injuries. There is no significant relationship, consistent with the RISKESDAS report of 2013, which noted that most

injuries are caused by falls and motorcycle [19] accidents. The most common type of injury is a cut or bruise, and the injury site is most common on roads [19]. The second most commonplace injury in this study was found in the residential environment. An accident is a condition that occurs suddenly and unexpectedly and can happen in all settings, including those around the residential area. The impact of an accident can physically cause injury [2].

CONCLUSION

Based on the results of research and discussions that have been carried out, We can conclude that the demographic characteristics of women who suffered injuries in Sleman are mostly over 46 years old (52.4%), marital status at most already married (54.9%), the most education is SMA/SMK/MA (34.7%), the most occupation is as a housewife (24.4%), the most residential location is in urban areas (80.7%). Injury sites are most on the highway (47.5%). The most common injury characteristics experienced by women in Sleman are minor injuries (66.8%), and the most common factors causing injury are *unintentional* or accidental types of motorbike land transportation accidents (28.8%).

There is a statistically significant relationship between the characteristics of women's age and residence in Sleman with the injury category. However, there is no relationship between the demographic characteristics (age, education, occupation, residence location, and place of occurrence) of women in Sleman with factors causing injury.

REFERENCES

1. WHO, 2018. *The top 10 causes of death*, accessed from https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

2. Potter, PA, Perry, AG 2005. *Teaching Fundamental Nursing: Concepts, Processes, and Practices.* Edition 4. Volume 2. Translation : Renata Komalasari, et al. Jakarta: EGC

3. World Health Organization. 2009. Global status report on road safety: time for action. Geneva. Available at: www.who.int/violence_injury_prevention/road_safety_status/2009.

4. Riskesdas, 2018. Accessed from https://www.kemkes.go.id/resources/download/info-terkini/hasil-riskesdas-2018.pdf.

5. Riyadina, W. 2009. Profile of injuries due to falls, traffic accidents, and sharp/blunt object injuries in Indonesian society, Indonesian *JournalCommunicable Diseases*, of1((1) 1-11, accessed from Non-https://media.neliti.com/media/publications/21381-EN-profit-fallinjury-induced-traffic-accident-and-hurt-object-tajamtumpul.pdf.

6. Ministry PPA, PPA and BPS 2017. Ministry Releases Survey Results of the National Women Life Experiences In 2016, accessed from https://www.kemenpppa.go.id/index.php/page/read/29/1380/kemen-pppa-dan-bps-rilis-hasil-survey-Experience-Life-Perempuan-nasional -year-2016#.

7. Bappenas, 2016. Women and Sustainable Development Goals (SDGs), accessible from http://sdgs.bappenas.go.id/perempuan-dan-tujuan-pembangunan-berkelanjutan-sdgs/

8. DIY Bappeda, accessed from http://bappeda.jogjaprov.go.id/dataku/data_dasar/index/548-data-kecelakaan-dan-pelaksanaan-tra-traffic?id_skpd=39.

9. Mariana, AT, Dewi, FST 2018. Injuries due to Traffic Accidents in Sleman: 2015 and 2016 HDSS Data, *Community Medicine News*, 34(6), 230-235, accessed from https://jurnal.ugm.ac.id/bkm/article/viewFile/28380/21771.

10. Indonesian Ministry of Health. Age Category According to the Ministry of Health, accessed from the Ministry of Health-https://www.scribd.com/doc/151484440/Kategori-Age-AccordingRI.

11. Deniro, AJ N, Nuniek, N. S, Novira, W. 2017. The Relationship between Age and Daily Activities with Fall Risk in Geriatric Outpatients, *Indonesian Journal of Internal Medicine*, Vol.4, no.4, Accessed from file http:///C:/Users/acer/AppData/Local/Temp/156-407-2-PB.pdf.

12. Winarsunu T. 2010. *Psychology of Occupational Safety*. Malang: UMM Press.

13. Mubarak, WI. 2007. *Health Promotion*. Yogyakarta: Graha Ilmu.

14. Mumtahinnah, N. 2007. The *Relationship Between Stress and Aggression in Housewives Who Don't Work*. Gunadarma University.

15. Nurhadi, M. 2009. Changes in the role of housewives have an effect on household harmonization. *Journal of sociology DiLeMa*, 21

16. Wulanyani, S, and Sudiajeng, L. 2006. Work Stress Due to Role Conflict in Balinese Women, *Anima, Indonesian Psychological Journal* 21 (2), 192-195.

17. Bottom A, Welaga P, Azongo DK, Wak G, Phillips JF, Oduro A. 2014. Road traffic fatalities - a neglected epidemic in rural northern Ghana: evidence from the navrongo demographic surveillance system. *Injury epidemiology*;1(1): 22.

18. Djibril, M. 2013. Living in a village is more likely to die sooner than in a city, accessed from https://republika.co.id/berita/nasional/umum/13/07/24 /mqfcww-live-in-the-country-maybe-more-die-than-in-town.

19. Research and Development Ministry of Health RI. 2013. *Basic Health Research*; *RISKESDAS*. Jakarta: Research and Development of the Indonesian Ministry of Health.