The Effect Of Community-Based Disaster Preparedness Training On Knowledge And Attitude Cadres In Tsunami-Prone Areas Of Padang City

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ABSTRACT

The high threat of tsunami disaster risk and the low knowledge capacity and attitude of cadres mean that it is necessary to provide training to increase the knowledge and attitude of cadres in responding to tsunami disasters. However, there is no effective community-based disaster preparedness training available for cadres to improve knowledge and attitudes. This study aims to determine the effect of community-based disaster preparedness training on the knowledge and attitudes of tsunami cadres in tsunami-prone areas of Padang City. The type of research is pre-experimental using a one group pretest-posttest research design using a double posttest. Respondents were cadres in Ulak Karang Utara Subdistrict, Padang City, totaling 20 respondents using total sampling. The intervention carried out was providing community-based disaster preparedness training to cadres for one day. The knowledge and attitude instruments were created by researchers and have been tested for validity and reliability. Data analysis used the repeated ANOVA test. There was an increase in the average value of knowledge pre-test and post-test 1 (8,05 ± 1,905 vs 10,00 ± 1,257), and there was a decrease in the average value of post-test 1 and post-test 2 (10,00 ± 1,257 vs 9,65±1,531). There was an increase in the average attitude value of pre-test and post-test 1 (51,35 ± 4,603 vs 54,05 ±4,359), as well as post-test 1 and post-test 2 (54,05 ± 4,359 vs 54,95 ± 2,781). There was an effect of disaster preparedness training on knowledge (p<0,001) and attitudes of cadres (p = 0,003). Providing community-based disaster preparedness training has a significant influence on the knowledge and attitudes of cadres.

Keywords :*Attitude, Cadres, Knowledge, Tsunami Disaster Preparedness, Training*

Introduction

The incidence of natural disasters every year has increased in the world, in 2021 the frequency of natural disaster events was 13% higher than the previous year of 367 incidents (1). World Health Organization (WHO) states that every year there are 190 million people affected to the direct impact of natural disaster (2). One of the biggest natural disasters that has the greatest impact on life in the world is the tsunami (3). Based on global historical tsunami database National Centers for Environmental Information (NCEI) of the 252 tsunami disasters affected in more than 540.000 confirmed deaths. Tsunami event in Indonesia has caused more than 170 thousand deaths in the last 20 years (4). Tsunami disaster in Indonesia have occurred 77 times or as much as 5% of tsunami disaster in the world such as Aceh tsunami disaster in 2004, the Pangadaran tsunami in 2006, the Mentawai tsunami in 2010, the Palu tsunami in 2018, and the Sunda Strait tsunami in 2018 (4–8).

In recent years, researchers have seen the threat of a magnitude earthquake that triggers tsunami waves up to 10 meters with a time of approximately 30 minutes which will

have an impact on the community in Padang city (9). Padang city is one of the cities in West Sumatera which has great tsunami potential because its coastline is facing the Megathrust earthquake plate (3,9). Based on result of zooning by Badan Penanggulangan Bencana Daerah (BPBD) Padang City, it was found that Ulak Karang Utara village had a high impact in the tsunami event (3). The high potential for tsunami disaster events in Ulak Karang Utara village needs to be carried out Community-Based Disaster Risk Reduction (PRBBK) involving all human resources to reduce vulnerability and increase capacity to reduce disaster risk (10). PRBBK is a method developed to optimize disaster risk reduction based on the opinion that communities are important subjects in disasters (11,12).

One of the implementation of PRBBK that has been carried out in Ulak Karang Utara village is to form and inaugurate Ulak Karang Utara village as a Disaster Response Village (Kaltana) in Tsunami by the BPBD Padang City (13). Kaltana is a village that has the ability to recognize threats in its area, is able to organize the community to reduce vulnerability and increase capacity to reduce disaster risk, and can recover from the impact of adverse disaster (14,15). The implementation of indicators for the formation and inauguration of Kaltana must have a team of disaster management community volunteers who are actively involved in capacity-building, knowledge, and disaster education activities such as cadres/disaster (15). Cadres play a role in preparedness, prevention, mitigation, and play a role in quick response to handling in the health sector (16). When in a situation where there is no disaster, cadres play a role in reducing disaster risk, one of which is to participate in disaster preparedness training (17). Participating in disaster preparedness training aims to improve the knowledge and attitude of cadres (18,19).

Training is one way to increase the capacity of individuals or organizations. Assessing the effectiveness of a training can use Bloom's taxonomy. Bloom formulated several domains, two of which are the domain of knowledge and attitude (20). Knowledge is the ability to acquire, store, and use information obtained from various information, experiences, and skills, while attitude is a person's reaction to certain situations (21). Increased knowledge and attitudes have a significant relationship with disaster preparedness education leading to a decrease in mortality rates and improving disaster preparedness (22) The statement is reinforced by Puspitasari et al that the provision of disaster preparedness training can make cadres respond faster when a disaster occurs and improve the knowledge and attitude of disaster preparedness cadres (19). Research by Susmini et al stated that the provision of disaster preparedness education and training can improve the knowledge and attitude of the community in dealing with disasters (23). The provision of preparedness training is one of the strategies to develop knowledge and attitudes to adapt, overcome, and recover from sudden disaster threats (24).

Based on a preliminary study to the head of cadres in Ulak Karang Utara Village, Padang City, it was found that some cadres in the area had received community-based disaster preparedness training in 2021. The material provided included the concept of tsunami, what is done after an earthquake and tsunami, and how to evacuate people to the nearest shelter with the method used is a lecture. In addition, based on the presentation of the head of the cadre and the Head of the Disaster Preparedness Division of the Padang City BPBD, it was stated that there had been no provision of first aid training to tsunami victims in Ulak Karang Utara Village, Padang City.

The magnitude of the potential for a tsunami disaster in Ulak Karang Utara Village, Padang City causes the area to have to be on alert for a tsunami disaster. Previous research has described various community-based disaster preparedness training programs designed to improve cadres' knowledge and attitudes toward tsunamis. However, these disaster preparedness training programs did not include first aid training for tsunami victims. Cadres play a crucial role in assisting disaster victims. This prompted researchers to investigate the impact of community-based disaster preparedness training on cadres' knowledge and attitudes in the tsunami-prone area of Ulak Karang Utara Village, Padang City.

METHODS

This type of research is pre-experimental using a one group pretest-posttest design using a double posttest (25). The number of samples in this study is equal to the number of research population of 20 respondents using the sampling technique, namely total sampling. The research was conducted in Ulak Karang Utara Village, Padang City, data collection was carried out for one month from October 28th to November 25th, 2023.

The inclusion criteria in this study are active cadres in Ulak Karang Utara Village, Padang City, aged 20-59 years, the minimum level of education is elementary school, willing to participate and participate in a series of community-based disaster preparedness training activities until completion, and willing to be a respondent in the research. The exclusion criteria in this study are cadres who have problems in communication and cadres who are sick. The drop-out criteria were cadres who changed domicile during the research period, cadres who did not participate in the entire series of training activities, and cadres who resigned during the research period.

The community-based disaster preparedness training provided was a training activity on the concept and community-based disaster preparedness, emergency first aid in a tsunami disaster, first aid for drowning victims, cardiopulmonary resuscitation, and evacuation of bodies after a disaster given to respondents, namely cadres in tsunami-prone areas of Ulak Karang Utara Village, Padang City. The activity aims to improve knowledge and attitudes of community-based disaster preparedness through lectures and demonstrations for 10 sessions with each session lasting 45 minute.

The instrument used was a questionnaire of knowledge and attitudes. The preparation of knowledge instruments for cadres in disaster preparedness was made by researchers based on training modules. The knowledge questionnaire consists of 12 questions with multiple choice answer choices. The scoring on this questionnaire is true (1) and false (0). The total score on this instrument is 0 – 12, with interpretation, the higher the total knowledge score, the better the knowledge and the lower the knowledge score, the less knowledge.

The preparation of the instrument of cadres in disaster preparedness was made by the researcher based on the training module. The attitude questionnaire consists of 12 questions with a choice of likert answers. The scoring on this questionnaire was strongly agree (SS) = 5, agree (S) = 4, disagree (KS) = 3, disagree (TS) = 2, and strongly disagree (STS) = 1. The total score on this instrument is 12 – 60, with interpretation, the higher the total attitude score, the better the attitude and the lower the attitude score, the less the attitude.

The knowledge and attitude questionnaire has been tested for content validity, construct validity, and reliability. The results of the validity test were obtained that the content of the V value in the knowledge questionnaire was 0.81 – 1 and the attitude questionnaire was 0.75 – 1. The validity test of the construct on the knowledge and attitude questionnaire obtained all valid question items where R results > R table. The results of the reliability test on the knowledge questionnaire using the Kuder Richardson formula 20 test (KR-20) obtained a reliability test value of 0.630, which is high reliability, and the reliability test on the attitude questionnaire using the Chronbach Alpha test obtained a reliability test value of 0.737, which is reliable.

Researchers carried out community-based disaster preparedness training activities on October 28th, 2023 in Ulak Karang Utara Village, Padang City. Before carrying out community-based disaster preparedness training, researchers and research assistants will provide pre-test sheets in the form of knowledge and attitude questionnaires.

The provision of materials related to the concept and community-based disaster preparedness by KOGAMI was followed by the provision of materials and demonstrations related to the concept of emergency first aid, first aid for drowning victims, cardiopulmonary resuscitation, and evacuation of bodies after disasters by PMI West Sumatra Province. The material delivered by the presenter was in accordance with the community-based disaster preparedness training module for disaster preparedness cadres that had been previously given by the researcher to the speaker.

The researcher and the research assistant provided post-test sheet to the respondents in the form of a questionnaire of knowledge and attitudes after the research was carried out. After that, all respondents joined the WhatsApp group that had previously received approval. Over a four-week span for subsequent post-test measurements. Researchers every week (first week to third week) give quizzes to respondents based on the materials and modules provided. The fourth week of researcher training and conducting post-test 2 measurements to respondents in the form of knowledge and attitude questionnaires. After that, the researcher conveyed to the respondents that their participation in the study had been completed.

This research has received an ethical feasibility letter that has been issued by the Ethics Committee of the Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University with the number KE/FK/1571/EC/2023 issued on October 9th, 2023.

RESULT

Demographic Data

The characteristics of the respondents in this study are described in Table 1.

Table 1. Frequency distribution of respondent characteristics (n=20)

Characteristics	n	%	Mean±SD
Gender			
Man	12	60	
Woman	8	40	
Age			39,80±12,72
Distance of the house from the beach			
≤1 km	19	95	
>1 km	1	5	
Long time as a disaster preparedness cadres			
1 year	7	35	
2 years	6	30	
3 years	3	15	
4 years	1	5	
5 years	2	10	
8 years	1	5	
Asking to become a disaster preparedness cadres			
Self-initiative	15	75	
Reccomendation from friend/ RT/ RW	3	15	
Others	2	10	
Obtain information about community-based disaster preparedness			
Electronic media	10	50	
Training from institutions (BPBD, Health Office, etc)	10	50	

Tabel 2. The Effect of Community-Based Disaster Preparedness Training on Cadres' Knowledge (n=20)

Measurement	Mean±SD	*p value*
Pre test	8,05±1,905	
Post test 1	10,00±1,257	<0,001
Post test 2	9,65±1,531	

Tabel 3. The Effect of Community-Based Disaster Preparedness Training on Cadres' Attitude (n=20)

Measurement	Mean±SD	*p value*
Pre test	51,35±4,603	
Post test 1	54,05±4,359	0,003
Post test 2	54,95±2,781	

DISCUSSION

Table 1 shows the distribution of respondent characteristics. The characteristics of gender respondents in this study were the majority of respondents with male sex (60%). Optimizing the role of cadres in disaster management involves the gender of men or women (26). However, for the male gender in disaster management activities, it is more needed because it requires stronger manpower such as carrying out activities in the emergency response phase (27). Men have better capacity for anticipation, self-defense, self-preparation, and disaster recovery than women, so that more men join as cadres (28). Age is one of the demographic characteristics in this study with the average age of the respondents being 39.80 which is included in the adult age group (29). Adult age groups are considered to become cadres because they have better physical and cognitive abilities (30). This is because cadres have an important role in all phases of disaster management, especially in the emergency response phase (16,31).

The majority of respondents (95%) have a distance of their homes from the beach ≤1 km. The distance of the house is very close to the beach (less than 2.5 km) and has a high risk of being exposed to a tsunami disaster (32). Cadres who live in areas with high disaster risk will have a higher attitude and preparedness in dealing with disasters (16). Long time being a cadres is one of the demographic characteristics in this study. The majority of respondents have been being a cadres for one year (35%). This is in line with research Rini et al which the respondents have a long time as a volunteer for 1-2 years (46,2%) (33). The longer a person becomes a cadres will have more experience, knowledge, and preparedness (34).

The majority of respodents stated that becoming a cadre was their own initiative (75%). The existence of one's own initiative to become a cadre in their environment can increase the attitude of disaster preparedness cadres to prevent and minimize the impact of disasters in their environment (35). That statement is in line with research Istiana (2016) that there is a significant relationship between a person's initiative to volunteer and the behavior to help others (prosocial behavior) (36). Some respondents who had never participated in the training got information from electronic mass media (50%) and some other respondents got information from disaster training from institutions (50%). Information sources are one of the sources of knowledge obtained from various sources such as electronic media and training. Cadres who obtain information from various sources tend to have broader knowledge (37).

Table 2 shows an increase in knowledge after receiving community-based disaster preparedness training. However, after one month of community-based disaster preparedness training, there was a decrease in the average score. The average score one month after training did not decrease significantly from the previous score, that indicating the knowledge score did not different significantly from the previous score.

One month after receiving training, respondents experienced a process of recalling previously obtained information (38). Knowledge retention is how long a respondent's understanding of the knowledge remains in a person's memory (39). Based on various studies, it is stated that a decrease in knowledge that is not too significant that indicates this recall process shows good knowledge retention (40).

Beside of that in Table 2 shows the effect of community-based disaster preparedness training on the knowledge of cadres. Community-based disaster preparedness training has an influence on the knowledge of cadres in tsunami-prone areas of Ulak Karang Utara Village, Padang City. This can be seen from the p value of <0.001 (<0.05). This research corroborates the research Hegazy et al stated that there was an effect of disaster preparedness training on

the level of knowledge before, after the training, and after two months of training (41). As well as research Huh & Kang where there is an effect of disaster preparedness in knowledge before, after being given training, and after one month of disaster training (42).

Providing training is one way to increase the capacity of individuals or organizations. The training is practice-oriented, short-lived, aims to improve the quality of human resources, and is carried out in the field. Training is able to increase knowledge causing an increase in stimulus which will increase knowledge and change attitudes (43). In order for the provision of community-based disaster preparedness training to be effective to respondents, the researcher used various learning methods.

Learning methods are a way of presenting material that has been prepared in a real and practical form to achieve learning goals (44). According to Kemenkes RI providing learning using some methods such as lectures, questions and answers, case studies, brainstorming, and demonstrations can increase the knowledge (45). The use of learning methods through lectures and demonstrations is one way to achieve a learning goal (46). In this study, the researcher used lecture and demonstration methods.The effectiveness of the use of lecture learning methods and demonstration of knowledge is supported by research Maghfiroh et al where training that uses lecture and demonstration learning methods can increase knowledge (47). As well as literature studies Emaliyawati et al states that providing training using lecture and demonstration methods can increase the knowledge (48).

Providing training through the lecture method is providing training by explaining something orally (49). Using the lecture method has several advantages, namely encouraging respondents to be more focused, the resource person can control and control the room, the resource person conveys the lesson widely, and the emotional connection between the resource person and the respondent is stronger (50). Giving through the lecture method in this study uses power point (PPT) media and modules. The use of power points and modules in learning can clarify the learning material provided (51). Power Point is one of several Microsoft Office programs that are used in multimedia-based presentations and activities (52). The use of power point media has several advantages, including being practical, attractive, able to increase learning motivation, and able to help in understanding learning materials (53). In addition, the advantages of using power points as a learning medium are the attractive presentation design, the presentation of writing, images, animations, and videos that attract respondents to observe them, and can be used as a learning medium repeatedly (54). This is supported by research Wibowo that the use of PowerPoint media is able to improve respondents' learning outcomes (55).

The training module is one of the learning media that acts as a medium for transforming respondents' knowledge and attitudes to achieve learning goals (56). The use of modules has several advantages, namely simplifying and clarifying the presentation of messages, increasing respondents' motivation to learn, and allowing respondents to learn independently (57). This research corroborates the research Husna et al stating that the provision of modules has an effect on increasing one's knowledge (58).

In addition to using the lecture method, in this study, the researcher used the demonstration method as one of the methods in providing disaster preparedness training. The demonstration method is one way of presenting learning by practicing directly to respondents (59). The demonstration method is a learning method by demonstrating the rules, events, and sequences in carrying out activities directly (60). The use of the demonstration method has several advantages, namely making it easier to expose the material to the respondents, interesting, easy to understand, the respondent's attention is more focused on the learning being provided, and can be observed directly by the respondent (61). This statement is in line with the research that has been carried out, where when the demonstration took place, respondents seemed to focus on paying attention to first aid measures in tsunami disasters such as heart-lung resuscitation and evacuation of bodies given.

Table 3 shows the effect of community-based disaster preparedness training on the attitude of cadres. Community-based disaster preparedness training has an influence on the attitude of cadres in tsunami-prone areas of Ulak Karang Utara Village, Padang City. This can be seen from the p value of 0.003 (<0.05). This research corroborates the research Silalahi et

al declared that health training affected respondents' attitudes before, after, and one month after training with a p value of <0.001 (62). Research of Mirzaei et al declared that there is a significant influence of the giving a disaster training on a person's attitude (63).

Training is able to increase knowledge causing an increase in stimulus that will increase knowledge and change attitudes (43). The provision of training causes an increase in attitude because of the stimulus that causes a person to make an assessment of something known and expected they can implement the information that has been obtained (37). The provision of disaster preparedness training can improve and provide positive changes in the attitude of cadres. The effect of providing training on a person's attitude is due to changes in a person's understanding and knowledge (64). Changes in a person's level of knowledge cause an increase in awareness so they can changes their attitudes (40).

Attitude has an important role in a person's preparedness in saving themselves from disasters, it indicates that the better a person's attitude towards disasters, the more prepared the person will be to face disasters (65). Attitudes are closely related to the emotional component, the knowledge component (perception, belief, and opinion), and behavior (66). Attitudes are formed from what is learned and attitudes determine how a person reacts to a situation (67).

CONCLUSION

The results showed that the average value of knowledge of cadres before being given training was 8.05, after being given training 10.00, and one month after being given training 9.65. The average value of the attitude of cadres before being given training was 51.35, after being given training was 54.05, and one month after being given training was 54.95. The results of the study found that the effect of community-based disaster preparedness training on the knowledge (p value = <0.001) and attitude (p value = 0.003) of cadres in tsunami-prone areas in Ulak Karang Utara Village, Padang City.

REFERENCES

1. OCHA. Global Natural Disaster Assessment Report. 2022.
2. WHO. Health Emergency and Disaster Risk Management Framework. W Health Organization [Internet]. 2019. 48 p. Available from: https://www.who.int/hac/techguidance/preparedness/health-emergency-and-disaster-risk-management-framework-eng.pdf?ua=1
3. BPBD Kota Padang. Dokumen Rencana Kontijensi Tsunami Kota Padang. 2017.
4. UNESCO, NOAA. Tsunami Sources 1610 B.C. to A.D. 2017. International Tsunami Information Center [Internet]. 2018;0–1. Available from: https://www.oregongeology.org/tsuclearinghouse/resources/pdfs/NOAA_tsunami-sources-2017.pdf
5. BNPB. Masterplan Pengurangan Risiko Bencana Tsunami. BNPB. Jakarta; 2012.
6. BNPB. BNPB [Internet]. 2019. Tsunami Selat Sunda (Update 14 Januari 2019). Available from: https://bnpb.go.id/berita/tsunami-selat-sunda
7. Damarjati D. Detik News [Internet]. 2018. Sore di Palu dan Donggala: Gempa, Tsunami, dan Likuifaksi. Available from: https://news.detik.com/berita/d-4361370/sore-di-palu-dan-donggala-gempa-tsunami-dan-likuifaksi
8. National Geophysical Data Center. NOAA National Centers for Environmental Information [Internet]. 2021. NCEI/WDS Global Historical Tsunami Database, 2100 BC to Present. Available from: https://data.noaa.gov/metaview/page?xml=NOAA/NESDIS/NGDC/MGG/Hazards/iso/xml/G02151.xml&view=getDataView doi:10.7289/V5PN93H7
9. Fauziah M. BMKG [Internet]. 2022. BMKG Dorong Kota Padang Wujudkan Tsunami Ready Community, Tingkatkan Kesiapsiagaan Gempa dan Tsunami. Available from:

https://www.bmkg.go.id/berita/?p=bmkg-dorong-kota-padang-wujudkan-tsunami-ready-community-tingkatkan-kesiapsiagaan-gempa-dan-tsunami&lang=ID
10. BNPB. BNPB [Internet]. 2023. PRBBK/ DESTANA. Available from: https://katalogkesiapsiagaan.bnpb.go.id/tentang-destana-prbbk/
11. Nurudin A. Pengaruh Pelatihan Penanggulangan Bencana Gempa Bumi terhadap Kesiapsiagaan Siswa Kelas VII di SMP Negeri 1 Imogiri Bantul Yogyakarta. Sekolah Tinggii Ilmu Kesehatan 'Aisyiyah; 2015.
12. Sudibyakto, Hamdoko DS, Hizbaron DR, Suryanti ED, Susmayani IM, Ayuningtyas EA. Kesiapsiagaan Bencana Berbasis Masyarakat di Kawasan Wisata Kotagede Yogyakarta. Jurnal Riset Kebencanaan Indonesia [Internet]. 2015;1(1):58–66. Available from: https://www.iabi-indonesia.org/wp-content/uploads/2015/07/JRKI-Vol1-No1-2015-compressed-4.pdf
13. BPBD Kota Padang. Mewujudkan Daerah Tangguh Bencana. Padang; 2021.
14. BPBD Kulon Progo. BPBD Kulon Progo [Internet]. 2023. Pembentukan desa tangguh bencana Desa Gotakan, Panjatan. Available from: https://bpbd.kulonprogokab.go.id/detil/156/pembentukan-desa-tangguh-bencana-desa-gotakan-panjatan
15. BNPB. Peraturan Kepala Badan Nasional No. 1 Tahun 2012 tentang Pedoman Umum Desa/ Kelurahan Tangguh Bencana. BNPB. 2012.
16. Zuliani, Hariyanto S. Pengetahuan, sikap, dan kesiapsiagaan kader siaga bencana dalam menghadapi bencana banjir. Jurnal EDUNursing. 2021;5(1):77–86.
17. BNPB. Panduan Perencanaan Kontinjensi Menghadapi Bencana (edisi kedua). 2011. 1–118 p.
18. Kamaluddin R, Trisnantoro L, Alim S. Pelatihan dalam peningkatan kapasitas kader kesehatan desa di daerah rawan bencana gunung berapi kabupaten banyumas. Universitas Gadjah Mada; 2019.
19. Puspitasari P, Lukita D, Rismayanti. Pembinaan kader dalam upaya peningkatan kesiapan kader menghadapi bencana banjir pada salah satu Kelurahan di Kecamatan Baleendah. Bina Sehat Masyarakat [Internet]. 2021;1(1):14–8. Available from: https://ejournal.upi.edu/index.php/BSM/article/view/33742
20. Nafiati DA. Revisi taksonomi Bloom: Kognitif, afektif, dan psikomotorik. Humanika. 2021;21(2):151–72. doi:10.21831/hum.v21i2.29252
21. Badran IG. Knowledge, attitude and practice the three pillars of excellence and wisdom: a place in the medical profession. Eastern Mediterranean Health Journal. 1995;1(1).
22. Rosseter R. The Impact of Education on Nursing Practice. American Association of Colleges of Nursing Fact Sheet; 2014. PubMed PMID: 2003169600.
23. Susmini S, Feri J, Wijaya S, Wibowo WDA, Arifin H, Lee BO. The Effects of a Disaster Preparedness app on Community Knowledge and Intentional Behavior in Hurricane Risk Areas. Disaster Med Public Health Prep. 2023;17(3). doi:10.1017/dmp.2022.46 PubMed PMID: 35331364.
24. Paton D, Anderson E, Becker J, Petersen J. Developing a comprehensive model of hazard preparedness: Lessons from the Christchurch earthquake. International Journal of Disaster Risk Reduction. 2015;14:37–45. doi:10.1016/j.ijdrr.2014.11.011
25. Widhiarso W. Menghitung korelasi biserial melalui SPSS. Yogyakarta: Fakultas Psikologi UGM; 2010.
26. Susilowati F, Siswanta L. Peningkatan Kapasitas Masyarakat Dalam Menghadapi Risiko Bencana Berbasis Gender. Jurnal Semar. 2016;5(1):41–9.
27. Hidayati D. Pengelolaan bencana berbasis gender: Pembelajaran dari gempa bumi Bantul 2006. Jakarta: PT Dian Rakyat; 2012.
28. Fatimah D. Gender mainstreaming dalam pengurangan risiko bencana. Yogyakarta: Circle Indonesia; 2008.
29. Kemenkes RI. Kemenkes RI [Internet]. 2024 [cited 2024 Jan 27]. Kelompok usia: Dewasa 19-59 tahun. Available from: https://ayosehat.kemkes.go.id/kategori-usia/dewasa

30. Muhammad J. Perkembangan kemampuan fisik (kelentukan, kekuatan otot ekstensor, dan kelincahan) orang dewasa muda ditinjau dari usia dan etnik. Journal Power of Sports. 2018;1(2). doi:http://doi.org/10.25273/jpos.v1i2.2249
31. BNPB. BNPB. 2011. p. Jakarta. Peraturan Kepala Badan Nasional Penanggulangan Bencana.
32. Andreas LO, Ashar F, Zuwida N. Analisa Parameter Kebutuhan Jarak dan Waktu Zona Rawan Tsunami pada Proses Evakuasi Masyarakat Kota di Padang. Cived. 2022;9(3):291. doi:10.24036/cived.v9i3.119471
33. Rini IS, Kristianingrum N dima, Widyastikasari R. Relationship between level of disaster preparedness in volunteers "Kelurahan Tangguh" in Malang city. Jurnal Of Nursing Science. 2019;7(2):133–44.
34. Fauzi AF, Hidayati A, Subagyo DO, Sukini LN. Hubungan tingkat pengetahuan bencana dengan kesiapsiagaan masyarakat di Kecamatan Wonogiri dalam menghadapi bencana gempa bumi. In: Prosiding Seminar Nasional Geografi UMS. 2017.
35. UNV. Volunteerism and disasters. United Nations Volunteers (UNV). USA; 2011. 10 p.
36. Istiana. Hubungan empati dengan perilaku prososial pada relawan KSR PMI Kota Medan. Jurnal DIVERSITA [Internet]. 2016;2(2):1–13. Available from: https://ojs.uma.ac.id/index.php/diversita/issue/view/88
37. Notoatmodjo S, Notoadmojo. Pendidikan dan perilaku kesehatan. Jakarta: Rineka Cipta; 2012.
38. Elita RFM. Memahami memori. Bandung: Universitas Padjajaran; 2009.
39. Hermanto MI, Samatowa L. Identifikasi profil retensi pengetahuan siswa melalui penerapan model pembelajaran Guided Context-Problem Based Learning (GC-PBL). Jurnal Normalita. 2022;10(2):137–47.
40. Puspita ID. Retensi pengetahuan, sikap, dan perilaku pasca pelatihan gizi seimbang pada siswa kelas 5 dan 6 di 10 Sekolah Dasar terpilih Kota Depok tahun 2012. Bina Widya. 2015;26(1):18–27.
41. Hegazy MAE kareem, Shounoda MS, Ismail GM. Impact of a disaster educational program on knowledge and practices of teachers among primary governmental schools, Cairo Governorate. Journal of Education and Practice [Internet]. 2014;5(29):175–84. Available from: http://www.iiste.org/Journals/index.php/JEP/article/view/16202
42. Huh S, Kang H. Effects of an educational program on disaster nursing competency. Public Health Nurs. 2018;1–8. doi:10.1111/phn.12557
43. Rustiawati E, Sulastri T, Dewi NH. Pengaruh Pelatihan Triase Terhadap Pengetahuan Perawat Dan Bidan Tentang Penerapan Triase Di Unit Gawat Darurat Puskesmas Gunung Sari Kabupaten Serang. Jurnal Ilmiah Keperawatan [Internet]. 2021;2(1):23–8. Available from: https://jurnal.untirta.ac.id/index.php/jik/article/view/14342%0Ahttps://jurnal.untirta.ac.id/index.php/jik/article/download/14342/8612
44. Sutikno MS. Belajar dan pembelajaran. Bandung: Prospect; 2009.
45. Kemenkes RI. Pedoman penyusunan kurikulum dan modul pelatihan bidang kesehatan. Jakarta: Kemenkes RI; 2023.
46. Aditya DY. Pengaruh penerapan metode pembelajaran resitasi terhadap hasil belajar matematika siswa. SAP (Susunan Artikel Pendidikan). 2016;1(2):165–74. doi:10.30998/sap.v1i2.1023
47. Maghfiroh SD, Kurniawati ND, Kritiawati. Pendidikan kesehatan metode demonstrasi dan ceramah meningkatkan kemampuan latihan batuk efektif pada anak usia sekolah. Critical Medical and Surgical Nursing Journal. 2019;1(1). doi:https://doi.org/10.20473/Cmsnj.V1i1.11966
48. Emaliyawati E, Satiadi D, Sutini T, Jamaludin HNN, Khofifah IN, Manika LR, et al. The effect of disaster education of increasing earthquake disaster preparedness : A narrative review. Jurnal Keperawatan Komprehensif (Comprehensive Nursing Journal). 2022;8(4). doi:10.33755/jkk.v8i4.407

49. Usman Z. Perbandingan efektifitas penyuluhan metode ceramah dan demonstrasi terhadap pengetahuan kesehatan gigi dan mulut siswa SD. Jurnal Cakradonya Dental. 2014;6(1).
50. Sulandari. Analisis Terhadap Metoda Pembelajaran Klasikal dan Metoda Pembelajaran E-Learning di Lingkungan Badiklat Kemhan. Jurnal Pendidikan Indonesia. 2020;1(2):176–87.
51. Yuliansah. Efektivitas media pembelajaran powerpoint berbasis animasi. Jurnal Efisiensi - Kajian Ilmu Administrasi [Internet]. 2018;XV(2):24–32. Available from: https://jurnal.untirta.ac.id/Candrasangkala/article/download/2886/2253
52. Wulandari E. Pemanfaatan powerpoint interaktif sebagai media pembelajaran dalam hybrid learning. JUPEIS : Jurnal Pendidikan dan Ilmu Sosial. 2022;1(2):26–32. doi:10.55784/jupeis.vol1.iss2.34
53. Purwanti L, Widyaningrum R, Melinda SA. Analisis penggunaan media power point dalam pembelajaran jarak jauh pada materi animalia kelas VIII. Journal Of Biology Education. 2020;3(2):157. doi:10.21043/jobe.v3i2.8446
54. Sanaky AHH. Media pembelajaran. Yogyakarta: Safiria Insania Press; 2009.
55. Wibowo AM. Efektifitas media powerpoint bernarasi dalam pembelajaran gempa bumi di Smp Islam Terpadu At-Tawaazun [Skripsi]. 2021.
56. Sumini. Pengembangan modul pelatihan untuk meningkatkan kualitas hasil pelatihan di balai latihan kerja. Prosiding Seminar Nasional Pendidikan. 2018;75–86.
57. Rahmi E, Ibrahim N, Kusumawardani D. Pengembangan Modul Online Sistem Belajar Terbuka Dan Jarak Jauh Untuk Meningkatkan Kualitas Pembelajaran Pada Program Studi Teknologi Pendidikan. Jurnal Visipena. 2021;12(1):44–66. doi:10.46244/visipena.v12i1.1476
58. Husna C, Hafni M, Fithria, Jannah S. Efektivitas edukasi mitigasi bencana terhadap kesiapsiagaan bencana gempa bumi dan tsunami pada keluarga pasien di rumah sakit. Idea Nursing Journal [Internet]. 2019;10(1):21–6. Available from: http://202.4.186.66/INJ/article/view/14174/12186
59. Sulistiani S, Hanum NA. Efektifitas penyuluhan dengan metode ceramah disertai demonstrasi secara virtual dalam meningkatkan pengetahuan menyikat gigi anak kelas 5 SD. Jurnal Kesehatan Gigi dan Mulut (JKGM). 2020;2(2):23–6.
60. Syah M. Psikologi pendidikan suatu pendekatan baru. Bandung: Rosda Karya; 2005.
61. Aeni N, Yuhandini DS. Pengaruh pendidikan kesehatan dengan media video dan metode demonstrasi terhadap pengetahuan SADARI. Care : Jurnal Ilmiah Ilmu Kesehatan. 2018;6(2):162. doi:10.33366/cr.v6i2.929
62. Silalahi V, Lismidiati W, Hakimi M. Efektivitas audiovisual dan booklet sebagai media edukasi untuk meningkatkan perilaku skrining IVA. J Media Kesehat Masy Indones. 2018;14(3):304–15.
63. Mirzaei S, Eftekhari A, Sadeghian M reza, Kazemi S, Nadjarzadeh A. The Effect of Disaster Management Training Program on Knowledge, Attitude, and Practice of Hospital Staffs in Natural Disasters. Journal of Disaster and Emergency Research. 2019;(May). doi:10.18502/jder.v2i1.566
64. Lusi I, Utami GT, Nauli FA. Hubungan Antara Tingkat Pengetahuan Dan Sikap Masyarakat Tentang Penyakit Filariasis Dengan Tindakan Masyarakat Dalam Pencegahan Filariasis. Jurnal Online Mahasiswa. 2020;66(1):93–8.
65. Hesti N, Yetti H, Erwani E. Faktor-faktor yang berhubungan dengan kesiapsiagaan bidan dalam mengahapi bencana gempa bumi dan tsunami di Puskesmas Kota Padang. Jurnal Kesehatan Andalas. 2019;8(2):338–45.
66. Rahmayani R. Faktor-faktor yang mempengaruhi kesiapsiagaan kepala keluarga dalam menghadapi bencana gempa bumi (di Desa Alue Deah Teungoh Kecamatan Meuraxa Kota Banda Aceh). Majalah Kesehatan Masyarakat Aceh (MaKMA). 2018;1(2):64–70.
67. Ningtyas BA. Pengaruh pengetahuan kebencanaan terhadap sikap kesiapsiagaan warga dalam menghadapi bencana tanah longsor di Desa Sridadi Kecamatan

Sirampog Kabupaten Brebes tahun 2014 [Doctoral dissertation]. Universitas Negeri Semarang; 2014.