



Research Article

Disaster Mitigation for Students with Intellectual Disabilities

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Abstract.

Children with intellectual disabilities in Batu still find it difficult to understand the disaster mitigation process. In fact, in Batu itself, natural disasters such as floods, landslides, and tornadoes often occur. Teachers and parents of individuals with intellectual disabilities are the closest people who also experience difficulties when a disaster occurs, especially in the process of education and disaster evacuation. The purpose of this study is to increase understanding of emergency evacuation and early warning of natural disasters for children with intellectual disabilities among parents, teachers, and BPBD using psychoeducation and focus group discussion (FGD) methods. This research was attended by foure people from BPBD Kota Batu, seven teachers from SLBN 1 Kota Batu, and six parents of children with intellectual disabilities. The results of the study showed an increase in parents' and teachers' understanding of disaster mitigation. This increased understanding made the subject carry out a process of simulating disaster evacuation activities for individuals with intellectual disabilities.

Keywords: focus group discussion, intellectual disability, mitigation, natural disasters

1. BACKGROUNDS

In the city of Batu in 2021, 147 natural disasters were recorded, with the 3 most frequent disasters being landslides, strong winds, and floods. thus, Disaster mitigation is important in avoiding the greater impact of a disaster. Disaster mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building in dealing with disasters[1].

In the city of Batu, there are 235 individuals with intellectual disabilities. The distribution of individuals with intellectual disabilities in the city of Batu is 92 people in the Batu sub-district, 64 people in the Junrejo sub-district, and 79 people in the Bumiaji sub-district. In teaching and training in disaster mitigation, individuals with intellectual disabilities in the city of Batu are still not optimal because they are hampered in delivering the material. In fact, in the city of Batu itself, natural disasters such as floods, landslides, and tornadoes often occur. Teachers and parents of individuals with

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intellectual disabilities are the closest people who also experience difficulties when a disaster occurs, especially in the process of education and disaster evacuation.

In the process of disaster mitigation, especially in increasing the ability to deal with disasters, children with intellectual disabilities are still constrained in terms of delivery, so the mitigation process tends to be neglected [2]. Children with intellectual disabilities who can educate and be able to train are a group of children with intellectual disabilities who can still be given training and/or understanding about disaster mitigation. although, the process of training and/or understanding disaster mitigation requires special skills.

One part of disaster mitigation is the creation and simulation of evacuation routes and early warning. Early warning is a series of activities to give warnings as soon as possible about the possibility of a disaster occurring in a place. Early warning consists of 4 warning levels, namely normal, alert, alert, and early[3]. Thus, knowledge about early warning for children with intellectual disabilities is important for them to live in society.

In addition to early warning, knowledge about evacuation routes and evacuation route simulations are not friendly to individuals with intellectual disabilities. Evacuation signs are generally only in the form of pictures, whereas individuals with intellectual disabilities do not understand the meaning of these signs. Thus, it is necessary to develop evacuation signs for individuals with intellectual disabilities.

Families of individuals with intellectual disabilities also cannot knowledge about mitigation and teaching to individuals with intellectual disabilities. The family is the first environment for individuals to learn about disaster mitigation [4]. Apart from family, school is a place of teaching for individuals with intellectual disabilities in knowledge about individuals with intellectual disabilities. Schools can be a training ground for knowing disaster mitigation and bringing up habits in dealing with disasters [5]. Habits that emerge can help individuals be more responsive and responsive when disasters occur [6].

Schools as places of learning and training for individuals with intellectual disabilities in the mitigation process have a very important role. However, the ability of teachers in teaching about mitigation and evacuation facilities is still lacking. In training and implementing mitigation in the community, the Batu city government created the Regional Disaster Management Agency [BPBD]. The Prevention and Preparedness Section of the Batu City Regional Disaster Management Agency [BPBD] is part of the Batu City BPBD which has the task of implementing policies in the fields of prevention, mitigation, preparedness, and community empowerment in pre-disaster and disaster risk reduction.



In training individuals with intellectual disabilities, the PK-BPBD Section of Batu City was hampered in material and implementation. Owned material cannot be given to individuals with intellectual disabilities because the material is designed only for general people. Meanwhile, the teaching process for individuals with intellectual disabilities requires a special method. This obstacle made it difficult for the PP-BPBD section of Batu City to conduct training for SLB school teachers on mitigation materials.

The target of this research aims to increase understanding regarding emergency evacuation and early warning during disasters for children with intellectual disabilities among parents, teachers and BPBD. This intervention contains education on emergency evacuation and early warning, and practices related to disaster mitigation for children with intellectual disabilities.

2. Literature Review

2.1. Children with Intellectual Disabilities

Intellectual disability is classified as a form of mental disorder that begins during the developmental period (starting before the age of 18). According to the American Association on Intellectual and Developmental Disabilities (AAIDD), intellectual disability is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills [7]. Intellectual disabilities must meet 3 criteria, including deficits in intellectual functioning (IQ scores are significantly below the average), deficits in adaptive functioning, and onset during development [8].

Disorders that occur such as difficulty doing common tasks in everyday life with children of their age (1) conceptual, skills related to language use, reading, writing, arithmetic, reasoning, memory, and problem-solving. (2) social skills related to the ability to communicate effectively with others and the ability to establish friendships with other people. (3) practical, individual ability to care for themselves independently, fulfill responsibilities related to daily tasks, etc.[9].

Children with intellectual disabilities can be influenced by several factors such as genetic and environmental factors. Genetic factors can be a major factor in children experiencing intellectual disability which can also affect brain development and cognitive function. Besides that, environmental factors can also be a factor in the occurrence of intellectual disability. Children who live in lower middle-class families have economic limitations, so children do not get facilities such as educational games, books, and



opportunities to interact with others that can stimulate them intellectually, and do not get proper education. As a result, children are less able to develop age-appropriate language skills or are less motivated to learn [9].

2.2. Disaster mitigation

Disaster mitigation is something that needs to be done as the main step of disaster management. In general, mitigation is carried out to reduce losses due to the possibility of a disaster, both loss of life and property that will affect the next life [10]. Disaster mitigation mechanisms can be carried out before a disaster occurs by building disaster-resistant buildings or building awareness and increasing community capacity in dealing with disasters [11]. Disaster mitigation activities are routine and ongoing activities, this is prepared and carried out long before the disaster occurs which often comes sooner than expected to have greater intensity than originally thought.

According to BNPB, mitigation is an effort made to reduce disaster risk through improving physical quality, awareness, knowledge, and ability to deal with disasters. Whereas disaster is an event or series that threatens and disrupts people's lives caused by natural factors and/or non-natural factors, as well as humans, resulting in casualties, environmental damage, loss of property, and psychological impacts [3]

Law No. 24 of 2007 concerning disaster management states that mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building in dealing with disaster threats. According to RI Ministerial Regulation No. 33 of 2006 concerning disaster mitigation, there are four important points in disaster mitigation, namely (1) availability and maps of disaster-prone areas. (2) Socialization towards increasing disaster knowledge and awareness. (3) Knowledge of things to do and prevent, as well as how to be safe. (4) Management and governance of disasterprone areas to reduce disasters.

2.3. BPBP, teachers, and parents as agents of changes in training and teaching mitigation

Ecological theory shows that human development is influenced by the environment. The 2-way relationship between the individual and the environment forms the individual's behavior. The individual environment is divided into 4 systems, namely the microsystem, mesosystem, exosystem, and macrosystem[12]. In this community, individuals are children with intellectual disabilities in the city of Batu, especially in the SLBN 1 school



in Batu City. Children with intellectual disabilities in Batu City do not have the ability and knowledge of disaster mitigation. Thus, if a disaster occurs, children will be vulnerable as victims of natural disasters, because they do not know the evacuation routes and early warnings related to disasters.

Macrosystem refers to the larger cultural and social context in which an individual lives, including cultural values, laws, and customs [12]. Macrosystems influence individuals indirectly but in powerful ways, shaping the attitudes, values, and behavior of those within them. For example, cultural beliefs about gender roles, social norms, and political systems can all shape individual experiences and opportunities. In this community, the macrosystem that applies is the law that regulates the right of every element of society to receive disaster-related education. Law of the Republic of Indonesia number 24 of 2007 concerning disaster management article 26 paragraph 1. This article explains that everyone has the right to receive education, training, and skills in implementing disaster management. This law is one of the legal bases for establishing government-owned legal entities, namely BNBP at the national level and BPBD at the regional level.

Once there is a macrosystem, it is followed by an ecosystem. Ecosystem refers to external systems that indirectly influence individual development, but in which they do not participate directly [12]. For example, a parent's occupation can affect the resources available to their family and affect their child's education and opportunities for socialization. Likewise, changes in government policy, such as new laws or regulations, can have an indirect impact on an individual's environment, which can affect their experiences and opportunities.

The prevention and preparedness section of the Batu City BPBD as a state-owned legal entity carries out the mandate of Law of the Republic of Indonesia No. 24 of 2007. This section is responsible for educating the people of Batu City about disaster mitigation, one of which is about emergency evacuation and early warning. This section is constrained in conveying education about emergency evacuation and early warning for children with intellectual disabilities to communities and schools with intellectual disabilities. This is due to the constraint of ignorance about the condition of children with intellectual disabilities. Thus, parents and teachers of children with intellectual disabilities and teachers of children with intellectual disabilities and to not know how to properly evacuate children with intellectual disabilities and do not know how to make early warnings when a disaster occurs.

Mesosystem refers to the interconnections and interactions between the different microsystems of which the individual is a part. Microsystems are small and direct environments where individuals interact directly with other people and objects, such as family, school, peer group, and society [12]. Mesosystems involve the relationships



and interactions between these microsystems, such as the relationship between a child's home and school environment, or between a peer group and the surrounding environment. For example, a child's experience in his family can influence his behavior at school, and vice versa. Mesosystems, therefore, are a way of understanding how different environments interact and affect one another, and how those interactions can influence individual development.

In mesosystem, this community does not have interaction between the home and school environment because there is no material or curriculum related to emergency evacuation and self-warning for children with intellectual disabilities that parents and teachers know. There is no curriculum or material related to emergency evacuation and early warning for children with intellectual disabilities taught at home or school, so there is no interconnection between schools and homes regarding emergency evacuation and early warning for children with intellectual disabilities.

After the mesosystem, there is a microsystem which is one of the systems that influences the development of the individual. The microsystem is one of the five interrelated systems that make up human development [12]. Microsystem refers to the immediate environment in which an individual interacts directly with people and objects, such as family, school, peers, and society. Individual experience in the microsystem is a direct influence on individual development. For example, the quality of parent-child relationships, a supportive school environment, and peer group dynamics can shape a child's development in unique ways.

Children with intellectual disabilities are not taught how to evacuate and early warning signs for disasters at school and home. Due to the ignorance of parents and teachers regarding material about emergency evacuation and early warning for children with intellectual disabilities. Thus, children with intellectual disabilities in Batu City do not have the ability and knowledge of disaster mitigation. Thus, if a disaster occurs, children will be vulnerable as victims of natural disasters, because they do not know the evacuation routes and early warnings related to disasters.

2.4. Research questions:

- 1. How do BPBD members understand children with intellectual disabilities?
- 2. How do teachers of SLBN 1 Batu City and Parents understand evacuation and early warning of natural disasters?



3. RESEARCH METHODS

3.1. Variables or concepts studied

This research is included in the type of quasi-experimental. The research was conducted using non-randomized the One Group Pretest -Posttest Design experimental method to see the differences that occurred after the implementation of the Focus Group Discussion [13]. Focus Group Discussion will be given after psychoeducation is complete. The purpose of the Focus Group Discussion is to facilitate each BPBD member and SLBN 1 member of Batu City to discuss the limitations between members regarding disaster mitigation in children with intellectual disabilities so that a better understanding is obtained regarding this matter.

3.2. Sampling Method

The research was conducted in three stages: data collection, intervention implementation, and analysis. The sample size in this study consisted of 17 community members. The sampling technique in this research used purposive sampling.

3.3. Research subject

The participants in the intervention consisted of the Batu City BPBD, Batu City SLBN 1 teacher, and parents of children with intellectual disabilities at Batu City SLBN1. This research was attended by 17 subjects such as 4 people from BPBD Kota Batu, 7 teachers from SLBN 1 Kota Batu, and 6 parents of children with intellectual disabilities.

3.4. Research Instruments

In this research, two instruments were prepared by researchers to see members' understanding of children with intellectual disabilities and understanding of disaster mitigation. The instrument contains a short survey consisting of a series of statements related to children with intellectual disabilities and disaster mitigation. Subjects will be asked to indicate their level of understanding or lack of understanding of intellectual disability and disaster mitigation in each statement using a Likert scale, starting from 0 (do not understand), 1 (somewhat understand), and 2 (understand). The statement includes an understanding of children with intellectual disabilities and disaster mitigation. Some examples of his statements are techniques in the evacuation process, how the early



warning system works, how to communicate with children with intellectual disabilities, and the characteristics of children with intellectual disabilities.

3.5. Research design

This research used a quasi-experimental with the intervention in this study was carried out using 2 methods, namely psychoeducation and Focus Group Discussion (FGD). The psychoeducational method can provide education in a community capacity [14,15]. The psychoeducation support in this intervention is the BPBD as an expert in emergency evacuation materials and early warning during disasters. The material related to children with intellectual disabilities will be filled in by teachers from SLBN 1 Batu City.

The focus group discussion (FGD) carried out in this intervention aims to provide additional insight to community members after receiving material related to emergency evacuation and self-warning, and children with intellectual disabilities. Thus, the design of the intervention given to this community is as follows:

Session 1: Giving Pretest

During the session, teachers, and parents of individuals with intellectual disabilities were given a pretest in the form of 5 essay questions related to their knowledge of the emergency evacuation process and early warning during a disaster. The BPBD was given 5 essay questions related to individuals with intellectual disabilities.

Session 2: Focus Group Discussion with Teachers about Intellectual Disability

In this session, the FGD process was carried out with the Batu City SLBN 1 teacher. The focus of the FGD was to determine the material to be given to BPBD Batu City. The FGD process was carried out at SLBN 1 Batu City with participants from SLBN 1 Batu City teachers. This FGD was conducted with the principal of SLBN 1 Kota Batu and 3 teachers from SLBN 1 Kota Batu students. This session produced the main points of discussion that would be given to BPBD Batu City, namely: Definition and classification of intellectual disability; Causes of intellectual disability; Characteristics of individuals with intellectual disabilities; The role of the family and society in helping individuals with intellectual disabilities; Protection and rights of individuals with intellectual disabilities.

Session 3: Emergency Evacuation FGD and Natural Disaster Early Warning

In this session, the FGD process was carried out with BPBD Batu City, especially the Prevention and Preparedness section. This FGD was conducted to determine the material to be given to SLBN 1 school teachers in Batu City. This FGD was conducted at the Batu City BPBD office. This FGD was carried out with the prevention and preparedness section of the Batu City BPBD and 1 of its members. In the session, the main topics of



discussion will be given to SLBN 1 teachers in Batu City, namely: The basic concept of disaster evacuation; evacuation technique; Disaster early warning system; Evacuation, and early warning protocols.

Session 4: Provision of emergency evacuation materials and early warning during disasters

During the session, the BPBD provided material related to emergency evacuation and early warning during a disaster to 7 teachers and 6 parents of individuals with intellectual disabilities. This material was provided by one of the staff from BPBD Kota Batu. The material is in the form of making evacuation routes, standards operational when carrying out an evacuation, and the evacuation process when a disaster occurs. In the session, there was high enthusiasm from the teacher with quite a lot of questions regarding the procurement of evacuation routes and the funding process in making evacuation routes.

Session 5: Giving Material About Individuals with Intellectual Disabilities

In the session, the teacher gave knowledge about children with intellectual disabilities to 4 people from BPBD and 6 parents of individuals with intellectual disabilities. This material was provided by the SLBN 1 school in Batu. The material provided is in the form of the ability to capture information for individuals with intellectual disabilities and the teaching process given to individuals with intellectual disabilities. In this session, the BPBD actively asked questions regarding the teaching media given to children with intellectual disabilities.

Session 6: FGD on emergency evacuation and early warning during disasters on Intellectual Disabilities

In this session, the FGD process was carried out regarding emergency evacuation and early warning during disasters on Intellectual Disabilities. FGDs are given after all parties (BPBD, teachers, and parents) have understood about emergency evacuation and early warning during disasters, and children with intellectual disabilities. The FGD process that was carried out resulted in the procedure for providing disaster evacuation materials to individuals with intellectual disabilities and SOPs in the disaster evacuation process. The results of the FGD are assigned to each community member. The BPBD has the task of making delivery materials regarding emergency evacuation and early warning during disasters for children with intellectual disabilities. On the teacher's side, making SOPs and disaster evacuation routes at school.

Session 7: SOP Evaluation and Sign-Making Disaster Evacuation for Individuals with Intellectual Disabilities



In this session, an evaluation is carried out regarding the duties of each community member. The tasks carried out by the BPBD were evaluated by the SLB teacher and the tasks carried out by the SLB teacher were evaluated by the BPBD. After the evaluation process is carried out on each task of community members. Community members are asked to apply the results of their assignments.

Session 8: Administration of Posttest, Evaluation, and termination of intervention

In the session, teachers, and parents of individuals with intellectual disabilities are given a Posttest in the form of 5 essay questions related to their knowledge of the emergency evacuation process and early warning during a disaster. The BPBD was given 5 essay questions related to individuals with intellectual disabilities. After that, a thorough evaluation of the intervention process that was carried out was carried out and continued for termination by encouraging community members to apply the results obtained from the intervention.

Session 9: Follow up

In this session, a follow-up process was carried out with community members. Community members can carry out the process of simulating disaster evacuation activities for individuals with intellectual disabilities. The simulation was attended by the BPBD, teachers, parents, and children with intellectual disabilities at the Batu City SLBN 1 school. The simulation process that was carried out went on with success of children with intellectual disabilities arrived at the gathering point by following the procedures in the evacuation process. The simulation process will also be included in routine activities at the Batu City SLBN 1 school.

3.6. Data Collection Procedures

After obtaining sufficient information about the subject and location of the research, the researcher prepared activity modules and relevant research measurement tools for the pretest and posttest. Furthermore, the researcher collected data through Focus Group Discussion and gave pretest and posttest questionnaires to focus group discussion participants.

3.7. Data analysis techniques

The Mann Whitney analysis technique will be used to analyze differences in understanding of community members regarding disaster mitigation and children with intellectual disabilities, using SPSS 25 version.



4. RESULTS

The results after holding a focus group discussion showed that there was an increase in understanding among PK-BPBD members, teachers and parents regarding children with intellectual disabilities. Intervention were carrie out in 9 sessions. This intervention process involved BPBD Kota Batu, SLBN 1 teacher in Batu City, and parents of children with intellectual disabilities at SLBN 1 Kota Batu. This intervention resulted in increased understanding of disaster mitigation and intellectual disabilities. Apart from that, evacuation and self-warning simulation activities were also held for children with intellectual disabilities at SLBN 1 Batu City. This intervention was attended by 4 Batu City BPBD people, 7 Batu City SLBN 1 teacher, and 6 parents of children with intellectual disabilities.

In the intervention process, a pretest and posttest were carried out related to the material provided. The material in the intervention process was divided into 2, namely material about children with intellectual disabilities addressed to BPBD Kota Batu and parents of children with intellectual disabilities. The second material on evacuation and early warning is intended for SLBN 1 Kota Batu teachers and parents of children with intellectual disabilities.

The results of Mann Whitney analysis on the pretest and posttest understanding of BPBD members and parents towards children with intellectual disabilities have Z - 3.729 and Asymp data test results. Sig. (2-tailed) = 0.000 < 0.055. This shows that there are differences in pretest and posttest understanding of BPBD members and parents of children with intellectual disabilities. Thus, it can be said that the implementation of focus group discussions is effective in increasing understanding of intellectual disabilities.

The results of Mann Whitney analysis on the pretest and posttest understanding of SLBN I members in Batu City on disaster mitigation and early warning from the results of the Asymp data test. Sig. (2-tailed) = 0.000 < 0.05 and Z – 4.382. This shows that there are differences in the pretest and posttest in the understanding of SLBN I members in Batu City on disaster early warning and mitigation. Thus, it can be said that the implementation of focus group discussions is effective in increasing understanding of disaster mitigation and early warning.

5. DISCUSSION

In this case, two methods of intervention were used, namely the psychoeducation method and Focus Group Discussion (FGD). Education using the psychoeducational



method is used to provide an explanation of two materials, namely about children with intellectual disabilities provided by the SLBN 1 teacher in Batu City. The second material is about evacuation and early warning given by BPBD Kota Batu. Submission of material using the psychoeducational method can be given to subjects in the form of a community and provides an increased understanding of community subjects. This is following previous research [14,15]. namely by delivering education using psychoed-ucational methods.

In addition to education using the psychoeducational method, the interventions also used the focus group discussion (FGD) method. The FGD method used in this study was used to increase understanding and open space for discussion to obtain an agreement to be implemented for the next stage. This is consistent with the main function of single-group FGDs, which is to become an interactive discussion space on a topic [16]. Discussions carried out, in this case, brought together SLB teachers as experts in the field of children with intellectual disabilities and BPBD as experts in the field of evacuation and early warning of disasters.

The discussions carried out by the two parties resulted in a procedure for providing education on emergency evacuation and early warning, and practices related to disaster mitigation for children with intellectual disabilities. This is done in a simulation process that will be included in the Batu City SLBN 1 curriculum. The simulation process that is carried out becomes a means of training for children with intellectual disabilities. Exercise with simulations in the process of evacuation and early warning of disasters can improve the abilities of children with intellectual disabilities [17].

The training is incorporated into school activities so that children with intellectual disabilities become aware of the process of evacuation and early warning of natural disasters. By incorporating mitigation training into the learning curriculum, it helps increase understanding regarding disaster mitigation in children. This process also involves parents of children with intellectual disabilitie [18]. Parents of children with intellectual disabilities have a major role in assisting in the evacuation process because parents are the closest individuals to children with intellectual disabilities [19].

6. CONCLUSION

The interventions provided used psychoeducation methods and focus group discussions (FGD). The results after focus group discussion showed that there was an increase in understanding among PK-BPBD members, teachers and parents regarding children with intellectual disabilities. This is interventions carried out in this community are



procedures for providing education on emergency evacuation and early warning, and practices related to disaster mitigation for children with intellectual disabilities. These results are simulated and will also be included in the curriculum at SLBN 1 Kota Batu.

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