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Published in:
International Journal of Disaster Risk Reduction

DOI:
[10.1016/j.ijdrr.2020.101987](https://doi.org/10.1016/j.ijdrr.2020.101987)

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Document Version
Publisher's PDF, also known as Version of record

Publication date:
2021

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Seddighi, H., Sajjadi, H., Yousefzadeh Faal Daghati, S., Lopez Lopez, M., Vemeghi, M., Rafiey, H., & Khankeh, H. (2021). Representation of Disasters in School Textbooks for Children with Intellectual Disabilities in Iran: A qualitative Content Analysis. *International Journal of Disaster Risk Reduction*, 53, [101987]. <https://doi.org/10.1016/j.ijdrr.2020.101987>

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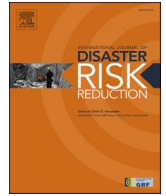
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Representation of disasters in school textbooks for children with intellectual disabilities in Iran: A qualitative content analysis

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ARTICLE INFO

Keywords:

Textbook analysis
Iran
Intellectual disability
Children
Natural hazard
Disaster preparedness

ABSTRACT

School textbooks are one of the main sources for teaching and learning in an education system. This study aims to investigate the representation of disasters in school textbooks for the children with intellectual disabilities (ID) in the education system in Iran.

This study uses a qualitative content analysis method. All school textbooks for students with ID in the education year 2019–2020 in Iran were collected. Among the whole 164 textbooks, 18 had content about hazards. Data were analyzed qualitatively by MAXQDA 2018 software.

Textbooks in most grades cover the topic of disasters triggered by natural hazards including geophysical (earthquakes), hydrological (floods), climatological (extreme temperatures, and drought), meteorological (storms/wave surges) and biological (epidemics and insect/animal plagues). Moreover, there are various topics of disaster risk management in the textbooks including mitigation, preparedness, and response.

Natural hazards are well covered in school textbooks for students with ID in Iran. However, more content about sheltering in disasters, reunification, as well as disasters' response and recovery will help children with ID in Iran to perform better during and after disasters. Moreover, the textbooks in several grades provide some debates on the prevention and the spread of infectious diseases for preparedness against epidemics. The COVID-19 pandemic and the significance of preparedness of vulnerable groups against pandemics evidence that school textbooks are a key means to transfer the information of preparedness in emergencies of all sorts to all children including children with ID.

1. Introduction

Disasters triggered by natural hazards are of the health threats for children [1]. Iran, like any other country, has experienced different weather and climate-related disasters. From 1990 to 2020, more than 80,000 people have been killed by disasters such as earthquakes and floods [2]. Natural hazards based on their origins are classified into five groups including geophysical (earthquakes, landslides, tsunamis, and

volcanic activity), hydrological (avalanches and floods), climatological (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges), and biological (epidemics and insect/animal plagues) [3].

The social division in the community determines the risk and vulnerabilities of disasters [4]. In other words, disasters reflect the vulnerabilities caused by the society [5]. The characteristics of different individuals and groups and their situation affect their capacity to

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<https://doi.org/10.1016/j.ijdr.2020.101987>

Received 22 July 2020; Received in revised form 23 November 2020; Accepted 24 November 2020

Available online 28 November 2020

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prepare for, respond to, and recover from disasters [6]. Failure to prepare individuals and groups is due to ignoring people at risk, their needs, and priorities for their recovery [7]. Humanitarian organizations have determined that individuals shall be given priority in disaster relief regardless of their nationality, race, gender, religious, or political beliefs [8]. Gender and diversity matter because such social systems shape the social worlds in which disasters occur in complex ways [9]. Researchers found that there are gender differences in risk perception [10], disaster communication [11], evacuation [12], and preparedness [13]. In gender studies, masculinity and femininity are characteristics that are learned and institutionalized in identities of men and women from childhood [6]. Usually men are portrayed as first responders, as well as rescuers and firefighters [14]. This also causes that men carry a heavy burden on their shoulders. Because men feel ashamed if something happens and puts them in danger [14]. Furthermore, some societies are less likely to think that women can work in first responding jobs and on the other hand, such societies think that they are more likely to be harmed. In disasters, the affected people may expect male first responders to come to their rescue [15]. These pieces of information are passed on to children and are learned by them. One of the sources to transmit such information is textbooks. Textbooks can either reproduce or put a stop on such constructs.

Children are one of the most vulnerable groups to hazards. Obviously the vulnerability level is not the same in all children. The age of children intersects with other social characteristics such as race, gender, class, neighborhood, religion, among other categories. Vulnerability is higher when childhood intersects with disability. Disability is an umbrella term, covering impairment, activity limitations, and social restrictions according to the World Health Organization (2011) [16]. Researchers focusing on children with disabilities and hazards found some risk factors for children with disabilities in hazards as follows: mobility difficulties, prior medical conditions, sensory integration problems, limited language proficiency, lack of social capital, and lack of efficient policies and structures [17–21]. Children with intellectual disability (ID) need specific education on hazards and safety tips. Intellectual disability is defined as a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence)". These items lead to a reduced ability to cope with the society as an independent individual (impaired social functioning) which begins prior to adulthood, and influences the growth procedure forever. Disability not only depends on health conditions but also on the fact that how many environmental factors help the child to have full engagement and inclusion in the society [22]. It was emphasized that students with ID in the transition from childhood to their adult life, should learn job skills, workplace support concepts, healthcare, self-care, and community inclusion skills via the school curriculum [23].

Results from a survey of Australian schools indicated that most schools had a disaster management plan, but many of them were not proper for students with disabilities [24]. Traditional approaches to disaster preparedness tend to see children with disabilities as "dependent" and "in need of care" with an emphasis on their vulnerability [25]. In the policies and procedures of such approach, children with disabilities play no part in their preparedness and it is their parents, caregivers, or teachers who help them in time of emergency [26–28]. However, some recent studies suggest that while the preparedness of families and teachers of children with disability is necessary, children's preparedness must further be strengthened [29–31]. Children with disabilities spend significant time outdoor such as school, on the playground, and with their friends, and they need to be aware of how to respond to hazards while attending outdoor activities [32,33]. It is shown that children with disabilities are capable of being prepared for, respond to, and recover from hazards [34]. For example, post-training evacuation behaviors of people with intellectual disabilities in a residential facility in Ireland were investigated [35]. 80% of participants were able to evacuate within 8 min during a nighttime drill. This potential can be realized when such children enjoy an enabling environment, information, and

support from parents or caregivers [18].

Disasters education in schools is considered a key step in child preparedness in many global frameworks [31]. Therefore, if one intends to see which information is transferred and where the gaps are analyzing, the textbooks of the targeted children will be the key. Two international organizations for children and education emphasized child preparedness in schools including The United Nations Children's Fund (UNICEF) and The United Nations Educational, Scientific and Cultural Organization (UNESCO). In the framework for hazard education for children adopted by the mentioned organizations, they introduced three pillars of hazard education in schools including safe learning facilities, school disaster management, and risk reduction & resilience education [36]. According to this framework, education curriculum and school textbooks play a significant role in child safety. Textbooks are the main source for teaching and learning for teachers and students [37–39]. For example, Ashley Merchant (2015) explored natural hazards in textbooks of the Philippines and the USA (Oregon and Texas). She found that natural hazards are represented in textbooks of eight grades in the Philippines and seven grades in the two mentioned states of the USA. Both countries introduced multiple hazards in their school textbooks [40].

Some countries have an inclusive education system both for students with ID and without ID, while others have a special education system for children with ID [41,42]. Textbooks are also prepared according to these different educational systems. However, research shows that textbooks have been effective in conveying information to students with ID [43]. Many researchers indicated in their studies that textbooks and scripted science lessons for children with ID are effective in different topics such as mathematics, science, literature, health, social skills, art [43–47]. Fajardo et al. (2014) indicated that applying easy-to-read texts are effective in the learning process of children with ID [48]. Selection of topics for conveying educational content to students with ID is of great importance [49]. Since these issues can strengthen their educational needs and social skills. Researchers indicated that these topics can affect their employment, health, and independent living in adulthood [50,51].

Although Iran has experienced a variety of disasters triggered by natural hazards, academic research in this field does not have a long history, especially from the perspective of social science. Therefore far, no studies have been conducted on disaster education for children with disabilities including ID in Iran. The main question in this study is: "Does the education system of Iran represent disasters in the textbooks utilized by students with ID?"

2. Materials and methods

2.1. Qualitative approaches and research paradigms

We have used a qualitative content analysis for this study, the steps of which are illustrated in Fig. 1. The qualitative content analysis helps to interpret the phenomena and meanings hidden in texts and images. Moreover, it is a means to answer the research questions. This method helps to increase knowledge in the relevant field. It goes beyond quantitative content analysis that only counts words and fails to reveal implicit information [52]. In addition, a checklist for reporting qualitative research (SRQR) was introduced by The O'Brien et al. (2014) has been applied in this study [53]. According to the objectives of the study, the following research questions are answered:

- Which natural hazards are covered in school textbooks of students with ID in Iran?
- In which grades the students with ID obtain information and knowledge about hazards from textbooks?
- Which risk reduction topics are contained in school textbooks of students with ID in Iran?
- How gender and diversity are represented in hazard topics in school textbooks for students with disabilities in Iran?

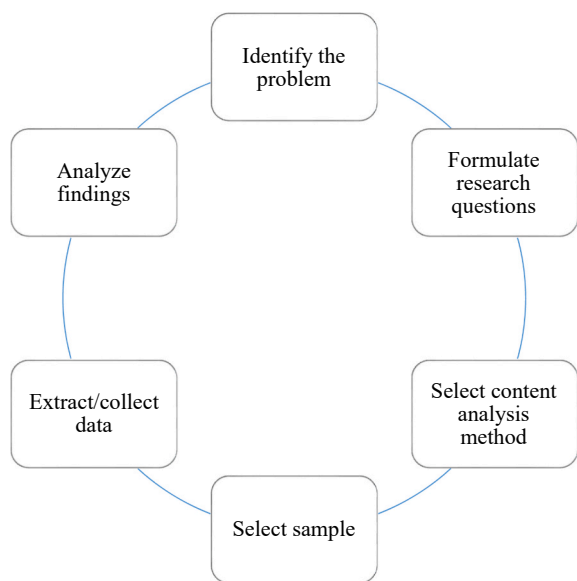


Fig. 1. The qualitative content analysis method cycle for representation of disasters in school textbooks for children with intellectual disabilities in Iran.

2.2. Context

Iran is a country in Western Asia with a population of more than 83 million [54]. This country is the most disaster-prone land in the Middle East [54]. Iran is among the most vulnerable countries in the world according to the World Risk Report [55]. Persians are the largest ethnic group in Iran (54%). Other ethnic groups in Iran are Azerbaijanis (16%), Kurds (10%), Gilaks (7%), Lurs (6%), Turkmens (2%), Arabs (2%), and Baloch (2%) [56].

The Iranian Education system for students with intellectual disabilities consists of pre-school, primary school, junior high school, and senior high school which is shown in Fig. 2. Pre-school education covers the span from the moment when a disability is diagnosed to the age of 6 years [57]. Primary education starts at the age of 7 and lasts six years. Junior and senior high schools last three and two years, respectively, maximum class size for students in the ID group is 6–11 [57]. There are special textbooks for the student with ID that are mentioned in Table 1.

There are 60170 students with ID in Iran, that is, 73% of students with disabilities including 37,305 boys and 22,865 girls. Children with ID are studying in 1569 special schools around the country [58]. Transportation service is provided for students with ID in rural areas. A children’s screening plan is conducted every year for children entering the primary school for the first time, which covers 99% of students in Iran [59]. Accordingly, children with disabilities, including the ones with intellectual disability, are identified. After monitoring children to enter the national education system, all children with intellectual disabilities must be enrolled in special schools [60]. The organization considers and accepts children with IQs 50 to 70 as educable children with ID. The Ministry of Education of Iran has a special organization for such students called the Exceptional Education Organization, being responsible for managing the relevant schools, training teachers, and producing educational content including textbooks for students and for teachers [61]. The organization is funded by the Iranian government

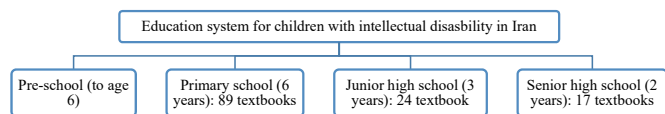


Fig. 2. Education system for children with intellectual disability in Iran (Iran has an exclusive education system, schools, and textbooks for students with ID).

Table 1

Number of textbooks for students with disability in the education system of Iran.

Type of disability	Number of textbooks in Primary education						Number of textbooks in high school					
	1	2	3	4	5	6	Junior		Senior			
Grade												
Intellectual disability (ID)	6	9	7	7	7	6	10	8	6	3	14	
ID-visual impairment	9	6	7	7	6	6						
Students with autism	1	1	1	1	1	1						

and it provides grants to the families of children for treatment, medicine, and rehabilitation [61]. For every eleven students with disabilities, there is one special teacher according to 2020 statistics [62].

2.3. Sampling strategy

A complete enumeration was conducted for collecting data. All textbooks for children with ID in the school year 2019–2020 have been collected. It was needed to analyze all textbooks to find gaps in representing natural hazard topics in the books.

2.4. Data collection methods

All textbooks for students with ID are available at the libraries of the Iranian Ministry of Education in all provinces. The books were screened to find any content (text or picture) with the mentioned keywords. Pages containing the relevant data were scanned and entered into MAXQDA 2018 software for coding.

Data extracted from the textbooks was organized into five categories including the textbook’s title, grade of the textbook, texts (and pictures) related to natural hazards, number of pages discussing about natural hazard, and total pages of a textbook. The ratio of pages related to natural hazards to the entire pages of a textbook can show how much importance is given to the subject of natural hazards in textbooks. Furthermore, in future research, researchers can compare how much content has increased or decreased over time in Iranian textbooks. It can also be useful for comparison of countries with respect to the contents of natural hazards in textbooks of children with ID.

Five characteristics were extracted to analyze gender and diversity in Iranian school textbooks for children with ID. These five characteristics are textbook title, grade, characters mentioned in the text and illustrated in the pictures (gender, ethnicity, race), the role of characters, and the type of disaster mentioned in the text and illustrated in pictures.

2.5. Units of study

Among the whole 130 special textbooks for children with ID in Iran, 19 books in different grades had inclusion criteria and were entered into the software, including science, public knowledge, religious studies, literature, social studies, skill learning, science and hygiene, socio-economic skills, and thinking & lifestyle books. Textbooks collected according to the grades in primary education and high school education are shown in Table 1.

2.6. Data analysis

We have used a narrative format for qualitative content analysis. The themes or core categories were used as section headings of manuscripts. Each theme was interpreted and different quotations and matrixes were used to show text examples [63]. Presenting examples in matrixes will help readers to see a large amount of data including themes and their examples in a table. In addition, presenting examples in the form of quotations and matrixes will enhance credibility of the results [63].

The principal investigator read the collected data carefully several

times during the open coding process, and then listed information, keywords, images, or phrases in the document as MAXQDA codes. Some codes were prepared after literature review. Nevertheless, other concepts associated with natural hazards even out of the keywords were considered. "Natural hazards" is a very broad topic to which different keywords can be attributed. Subcategories were categorized into three main topics including natural hazards, first aid, and disaster management. All initial keywords are exhibited in Table 2.

The researcher divided the codes into categories as the study proceeded so that similar codes are contained in a single category, and then he specified the characteristics and dimensions of each category. The codes and data were compared to find similarities and differences. According to results, the categories and subcategories were developed.

2.7. Techniques to enhance trustworthiness

To enhance trustworthiness, two steps were taken: peer check and expert check. In order to ensure trustworthiness, initially two researchers of the research team coded data. The coded data were reviewed by two other members of the team. Coded data including text and images was shared with an expert in disaster studies (out of the research team), an expert in children studies (member of the research team), and an expert in gender studies (outside of the research team). Their comments improved the analysis of results. In addition, data validation was conducted through continuous comparative analysis, which involves going back to the data in order to further validate and improve the categories. Such strategies strengthen methodological rigor by reducing the risk of validation.

3. Results

It was found that throughout the whole 12 school years totally 14 textbooks for students with ID in Iran provide information on risk knowledge in their content. These textbooks are shown in Table 3 and could be classified into five clusters including natural science cluster, life skills cluster, social studies cluster, language cluster, and religious studies cluster.

The results of this study are shown in four themes and eight sub-themes that are shown graphically in Fig. 3.

3.1. Description of natural hazards

Children with ID in Iranian education system could get information about different natural hazards including geophysical, hydrological, climatological, meteorological, and biological disasters. In the textbooks of primary school (grades 1 to 5), the final chapter of science textbooks in each grade is devoted to "earth science" including water and weather (grade 1), water (grade 2), weather (grade 3), meteorology (grade 4), storm and wave surges (grade 5), and flood (grade 6). Consequently, one can declare that there is various information in different textbooks at all grades for children with ID in Iran.

3.1.1. Geophysical

Geophysical disasters include earthquakes, landslides, tsunamis, and volcanic activity. This type of natural hazards is presented as follows: literature textbook grade 5 on earthquake preparedness, religious

studies grade 5 on helping each other after an earthquake, skill learning textbook for children with autism and ID, grade 5 on earthquake drill, and in science and hygiene textbook grade 7 on earthquake causes and effects, as well as safety tips before, during, and after earthquakes. In the religious studies textbook grade 5, there is a discussion about supporting each other (i.e. donation) in an earthquake. In a story in this textbook we read: "Sarah asked her mother: Why do people take these things to a rural region and many villagers lost their homes and lives. Thus, people are helping. After hearing her mother's words, Sarah asked her, "Do we help earthquake survivors too?" The mother replied: Yes, I intend to buy and donate a blanket for them". The literature textbook has content about earthquake preparedness presented with the following story: "That day, the teacher showed the students a film about the earthquake. When the movie ended, the teacher divided the students into two groups and said, "I want you to talk about the earthquake and write down everything you know ". The teacher asked the first group to read their writings, Zahra began to read:" The earthquake causes that various places like houses and schools are damaged and many people are injured. We should not run, it is advisable to go to safe places and seek shelter in the corner of the wall or next to the columns if we are at home. The teacher, who had been listening carefully to them, said, "My dear children! It is very important that everyone knows what to do during an earthquake to minimize damage." In the science and hygiene textbook grade 7, we read a discussion about earthquake including earthquake causes and effects, safety tips before, during, and after earthquakes. Skill learning textbook grade 5 for students with autism and ID includes a visual content training the students what to do during an earthquake drill.

3.1.2. Hydrological

Science textbook has a complete section on flood causes, prevention and mitigation, preparedness, and safety tips. The flood causes along with some proposed experiments are introduced in "observation and exercise" section.

3.1.3. Climatological

In a social studies textbook, one finds emphasis on severe cold weather (walking on an icy road), safety tips, as well as drought causes and response.

3.1.4. Meteorological

In the science textbook grade 5, there are notes on storm and tornado causes, as well as safety tips for such disasters. It describes the difference between wind and storm on children with ID and indicates the damages due to storms and related safety tips.

3.1.5. Biological

In science textbook of grade 4, the reasons of some diseases are mentioned along with the related images, definition of microbes and virus, infection ways, and disease signs. Here is an example of the content:" When we catch a cold, while coughing or sneezing many viruses spread in the air. These viruses enter the body through the air and make us sick. For this reason, we should cover the mouth and nose with clean tissue while sneezing and coughing." In science and hygiene textbook grade 8, the topic of animal and insect infestation is discussed completely. Communicable diseases again are discussed in science and hygiene

Table 2 Example keywords used to search content in the textbooks.

Natural hazards	Floods	hurricanes	tornadoes	volcanoes	earthquakes	tsunamis
	Storm	emergencies	crisis	hazards	risks	fire
	Bushfire	landslide	haze	sandstorm	drought	snowstorm
	Heatwave	Cold wave	Extreme weather	avalanche	thunderstorms	disease epidemics
Disaster management	preparedness	Risk reduction	response	resilience	readiness	drill
	Mitigation	Climate change	environment	Prevention	Abuse	displacement
	Sheltering	Evacuation	Emergency organizations	Psychosocial support	Charity	Donations

Table 3
Findings from the textbooks for children with ID.

No.	Grade	textbooks	Content	Page (s)	Total pages
1	1	science	Drought preparedness and response, extreme weather preparedness	18	161
2	3	public knowledge	Firefighting materials, vehicles and duties	1	120
3	4	science	Preparedness for extreme weather, communicable disease such as Flu	3	104
4	5	religious studies	Psychosocial support in emergencies, Helping each other in disasters such as earthquake and donation	3	59
5	5	science	Storm causes and safety tips, tornado causes	8	96
6	5	literature	A story about earthquake preparedness	5	102
7	5	social studies	Emergency organization phone numbers, severe cold weather, drought in Iran	30	92
8	5	skill learning (students with autism and intellectual disability)	Earthquake drill	1	55
9	6	science	Flood causes, prevention and mitigation, preparedness and safety tips	11	107
10	6	literature (Farsi)	A story about supporting each other in disasters	2	89
11	7	science and hygiene	Earthquake causes and effects, safety tips before, during, and after earthquakes; prevention and mitigation	11	64
12	8	science and hygiene	First aid for fall, burn, and nose bleeding, animal and insect infestation	15	75
13	8	socioeconomic skills	emergency organization phone numbers	25	110
14	8	literature (Farsi)	Local solutions for extreme weather, heritage building damage resulted from an earthquake		
15	9	thinking and lifestyle	compassion in disasters, helping others in fire, emergency organizations	11	84
16	10	literature (Farsi)	Role of aid-workers in disasters	6	85
17	11	sciences and hygiene	communicable diseases such as cholera or influenza	12	80
18	11	social studies	Impacts of disasters on environment	3	92

textbooks for more detailed information and exercises.

3.2. Description of different grades

In various grades were mentioned different natural hazards and disaster risk management concept that a summary of that is shown in Fig. 4.

In science textbooks of grade 1, there are contents about drought preparedness and response extreme weather preparedness. In this grade, information transfer is carried out mostly in a visual way. In grade 3, children with ID learns about firefighting materials, vehicles, and duties of firefighters in their public knowledge textbook. In grade 4, one finds contents about preparedness for extreme weather and communicable diseases such as influenza. For example, there is a content about the communicable diseases as follows: "Some patients, including the people infected with influenza, spread the disease through contact. Therefore keep your distance and avoid being in close contact with sick people. Sometimes your body temperature rises and you feel uncomfortable. When you have fever, you may be ill. Excessive body heat is called fever. They use a thermometer to measure fever."

Grade 5 textbooks contain information about natural hazards more than any other grade. In grade 5, the topics concerning psychosocial support in emergencies, helping each other and donations in disasters such as earthquake, storm causes and safety tips, tornado causes, a story about earthquake preparedness, emergency organization phone numbers, severe cold weather, and drought in Iran are the relevant contents in the textbooks. In grade 6, the students learn about flood causes, preparedness, and mitigation as well as supporting others in disasters, by storytelling. In grade 7 earthquake topics are discussed: earthquake causes and effects, safety tips before, during, and after earthquakes prevention and mitigation. In grade 8, there is information about first aid skills, animal and insect infestation, emergency organizations, phone numbers, local solutions for extreme weather, heritage building damage because of an earthquake. In grade 9, compassion in disasters, helping others in fire, and emergency organizations are discussed. In literature textbook of grade 10, the role of aid workers in disasters is surveyed: "A few years ago, in the spring, it rained heavily in our city. Floods swept across the country, destroying many homes. People affected by the flood were left in the rain, and children were crying from hunger and cold. A group called relief workers came to the city. They gave people blankets, tents, food, and medicine. A group of people also helped the rescuers to set up tents and distribute blankets and food." In grade 11, the ways for preventing outbreaks and communicable diseases as well as the impacts of disasters on the environment are discussed.

3.3. Risk reduction topics

3.3.1. Mitigation and prevention

In science textbook for students with ID in grade 4, there is a discussion about extreme weather mitigation and resilience. Some historical buildings are shown in this textbook and explained as follows: "In some hot areas, the roofs of the houses are dome-shaped and "Windcatcher" works as a natural air conditioner." The Wind catcher (Persian: bādgir: bād "wind" + gir "catcher") is a traditional Iranian architectural element to create natural ventilation in buildings and appears to be an old innovative solution for resilience and mitigation in hot weather [64]. Moreover, in this textbook a discussion about prevention of communicable diseases is provided.

In science textbook grade 6, there is an explanation about flood mitigation and prevention. We read in this textbook "Flooding is more frequent in places where deforestation has occurred due to removing shrubs, felling, etc. Vegetation plays an important role in flood prevention. The plants do not allow raindrops to hit the soil directly or enter the same gradually. It is extremely important to protect the forests and plants". In this textbook in the grade 7, the students learn about earthquake mitigation and

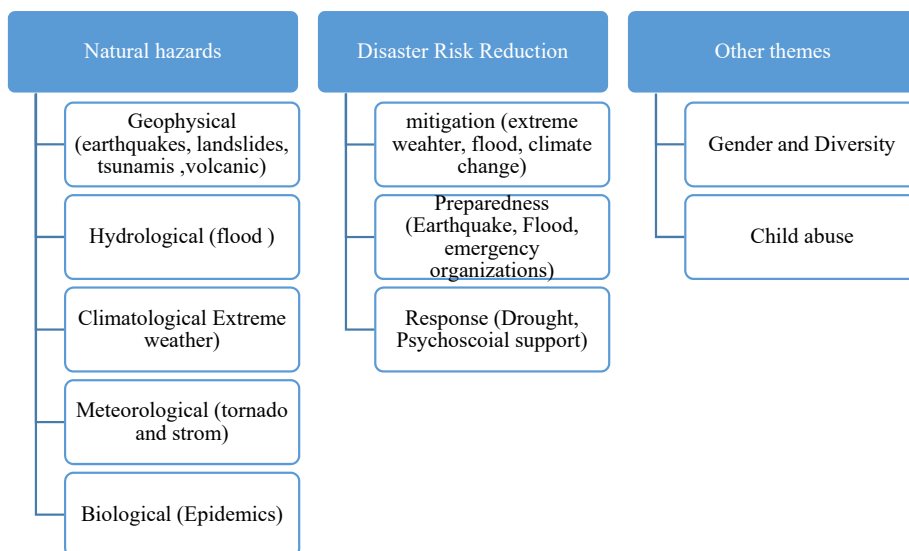


Fig. 3. Summary of the themes and subthemes used in the study.

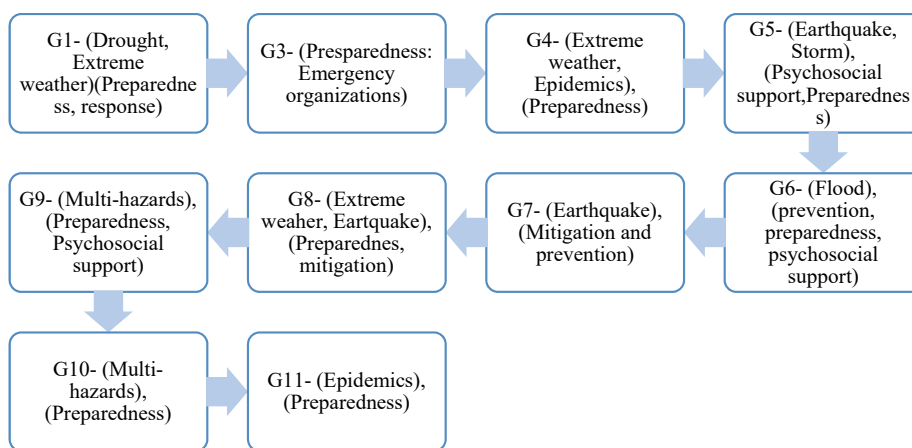


Fig. 4. Summary of content in different grades for students with ID in Iran. The information was presented in the following format: (natural hazard), (disaster risk reduction concept). G stands for grade in the figure.

prevention. The authors by inserting a picture illustrating the earthquake impact on buildings inferred that: “*Nowadays, the experts use maps and building materials such as beams, bricks, cement, gravel, sand, etc. to construct earthquake-resistant buildings.*” Furthermore, the textbook invites the students to investigate “*Why an earthquake is more devastating in rural regions?*”

In literature (Farsi) textbook mitigation strategies in the past are discussed by a story. We read in this textbook: “*Mr. Ahmadi showed us a large brick building and said it were “Ice House” (Yakhchal). It was like a large pond covered with a dome. People in the past would keep ice in this huge building all seasons of the year and used it in summer. My brother asked, “What is that room with long windows on top of some house?” and Mr. Ahmadi answered, “It has a wind catcher. Kerman has hot summers and people used to apply wind catchers to cool indoor air.*”

Students in science and hygiene textbook grade 9 learn about environmental protection and recycling importance through some facts including: “*Increasing population and inappropriate use of natural resources such as forest, water, and soil will reduce such resources and raise the waste. As waste increases, it pollutes the environment and so recycling is needed to reduce the pollution and conserve natural resources.*”

3.3.2. Preparedness

Since the first grade, students learn how to prepare for disasters. They get acquainted with drought preparedness in the science textbook grade 1, with storm preparedness in the science textbook grade 5, with earthquake preparedness in Farsi literature textbook grade 5, with cold weather preparedness in the social studies textbook grade 5, with flood preparedness in the science textbook grade 6, and with earthquake preparedness in the science and hygiene textbook grade 7. Furthermore, students with autism in grade 5 learn about earthquake preparedness in their skill learning textbook. Preparedness provides a good opportunity to tailor the message and education for children with ID and it is a generic concept for all children with or without disabilities.

For example, in the science textbook grade 6, they present eight tips for flood preparedness including “*Keep calm, cut off the flow of electricity, go to high places like rooftops or hills, and avoid the hanging wire and the like*”. In science textbook grade 7, we read about earthquake preparedness: “*1) Inside the building, go under the table, hold it firmly, and take shelter. 2) In the narrow hallways, away from the door, take shelter by the wall and hold your head with hands. 3) Do not run up and down in the stairway; sit down and protect your head and hands. 4) In the kitchen, stay away from refrigerators, stoves, and shelves. 5) On the street, avoid utility lines and wires, light bulbs, and trees. 6) In the school yard, avoid the*

courtyard wall and building.” Each recommendation is presented along with related images.

To prepare the students with ID for hazards, the emergency organizations are presented in five textbooks including the public knowledge textbook grade 3, the social studies textbook grade 3, the social studies grade 5, the socioeconomic skills textbook grade 8, and the thinking and lifestyle textbook grade 9. More than any other organization, fire-fighting organization is introduced and referred to in textbooks. The next ones are Red Crescent, Emergency Medical Organization, Welfare Organization, and Police. Emergency organizations are introduced to the students according to their grades. For example, in grades 1–3, most students get acquainted with emergency organizations through the images illustrating special vehicles and clothes of emergency forces as well as different types of accidents in textbooks. In the upper grades, students become acquainted with relief organizations through textual explanation, illustrations, and exercise. For example, in the social studies textbook, grade 5 emergency organizations are introduced along with examples: “When someone is injured or sick, we call 115 Ambulance” or “When a fire breaks out, call 125 Fire Departments.”

3.3.3. Response

In the social studies textbook grade 5 the drought response is represented and explained: “Our country, Iran, has a shortage of water, because snow and rainfall are low in most places of the country. Therefore do not leave the tap running while brushing your teeth. Turn off the school drinking water tap after use. Do not leave the wastes in the water or in the river”. It is mentioned two roles for students with ID in the time of disaster in thinking and lifestyle textbook grade 9. The first one is “showing compassion and empathy” for the affected people in disasters: “When we understand a person’s heart feelings, imagining ourselves in someone else’s situation to perceive his/her sorrow while experiencing a misfortune, we actually sympathize with the person, like the sympathy with earthquake victims”. The second one is “calling to emergency organizations” in time of disaster. The second recommendation is presented along with the activity of answering the question: “how Zahra can help her mother?”. An image in the textbook shows a woman trapped in the ruins of an earthquake.

In the religious studies textbook grade 5, responding to disasters by psychosocial support in emergencies and helping each other (donation for instance) is indicated. This textbook describes that helping each other in disasters and emergencies is a religious duty. In the literature (Farsi) textbook grade 6, there is a story about supporting others in disasters as follows: “An autumn day, a severe storm began to blow. One of the pines bent in the wind and leaned on his friend. He sadly told the unharmed pine, “My good friend, forgive me, my roots have come out of the ground and I may fall on the ground, support my weight for a few days if you can.” The other pine said “Oh, my good friend, I will help you to strengthen your roots in the ground”.

3.4. Gender and diversity

With the analysis of all characters related to natural hazard content in the textbooks of children with ID, it was indicated that Iranian textbooks use both male and female characters equally for presenting

Representation of gender and diversity in the content related to natural hazards.

No.	Grade	textbooks	Character (gender/disability/ethnic)	Role of character	Emergency topic
1	3	public knowledge	Men/Non-disable/Persian	Firefighters	Fire
2	5	religious studies	Mother&Daughter/Non-disable/Persian	Donation to affected people	Earthquake
3	5	literature	Women teacher with girl students/Non-disable/Persian	Drop, Cover and Hold drill	Earthquake
4	5	skill learning	Boys and girls/Non-disable/Persian	Drop, Cover and Hold drill	Earthquake
5	6	literature (Farsi)	Men and women/Non-disable/Persian	Donation to affected people	Disasters
6	7	Science and 7 hygiene	Boys and girls/Non-disable/Persian	Safety tips and safe places	Earthquake
7	9	thinking and lifestyle	Men and women/Non-disable/Persian	First responders (rescuers)	Earthquake
8	10	literature (Farsi)	Men/Non-disable/Persian	First Responders (rescuers) and firefighters	Earthquake
9	11	sciences and hygiene	Men/Non-disable/Persian	Firefighters	Emergency organizations

natural hazard preparedness to students. However, first responding was implicitly introduced as a masculine job. For example, all firefighters in the textbooks for children with ID were men. In natural hazard topics, male and female characters are equally illustrated in pictures and stories. There is no character with disability represented in textbooks. In all textbooks, students in school uniforms are represented as people from Persian ethnic group and we see no students of minor ethnicity among them. It was shown some examples about representation of gender and diversity in textbooks of children with ID in Table 4.

3.5. Child abuse

During disasters, the risk of violence against children, sexual violence, and child trafficking is more likely. Therefore, educating children about avoiding victimization is of great importance. For example, in the social studies textbook grade 5, some tips are mentioned including: “Avoid going to secluded areas; Do not talk to strangers and do not go with them, if a stranger on the street asks us to go somewhere say no, I’m not allowed”. There are also some relevant practices in this book such as the following: “Saman was returning home from school when a stranger approached him on the way and said, “What is your name?” Saman said his name. “I have a beautiful parrot in the house. Let us go see it”, the man said. Saman looked at the man and thought. “I have a lot of toys that I want to give you a few”, the man said again. What do you think Saman should say in response to that man? Write down the appropriate sentence”.

4. Discussion

In this study, we found that in fourteen textbooks for students with ID in Iran were presented natural hazards topics. It is difficult to judge if enough information on natural hazards were transferred to children with ID via textbooks, as there is not any confirmed checklist for evaluating the associated contents in the textbooks. Children with ID are more vulnerable to disasters. Nevertheless, textbooks are not the only source for education. Experts have emphasized the importance of verbal and visual training in the curriculum for students with ID to change their behavior [65]. The information on natural hazards is provided to students according to their age, grade, and the book subject. Furthermore, information is presented in different ways such as facts, poems, storytelling, pictures, and exercises. The type of material for these children was both appropriate for their age and easy to read. Textbook authors have tried to use more images and less text to convey information. Moreover, for children with ID and visual impairments, larger fonts of text and images are used.

The school textbooks for students with ID cover major natural hazards in Iran such as earthquakes, floods, and droughts. Preparedness and safety tips for the mentioned disasters are presented completely. Furthermore, all texts that provide information about disasters’ preparedness are supported by relevant pictures. Extreme weather is the other natural hazard mentioned in the textbooks. The above natural hazards in the textbooks (earthquakes, flood, drought, and extreme weather) are the most common natural hazards in Iran. Charles Melville (1984) reviewed frequent disasters in Iran in the previous 1000 years. He indicated that climate change had a main role in the occurrence of

frequent disasters including drought, earthquakes, floods, and extreme weather [66]. All science textbooks at all levels included a chapter titled “dynamic earth”. The major part of information about disasters is presented in this chapter. This information on natural hazards is necessary because it contributes to the preparedness of children with ID. Good (2016) indicated that children with disabilities, especially ID, received less support in the time of emergency in comparison to regular time [67]. Such children may have communication difficulties in the time of emergency, they may be excluded from the disaster response, or they may misinterpret the situation [67]. Brunner and Lewis (2004) emphasized that every student with disabilities should learn safety tips in disasters including sheltering and evacuation [68].

There is also some content about preparedness in pandemics in the Iranian textbooks for children with ID. The information on prevention and safety tips before, during, and after communicable diseases is complete. The COVID-19 pandemic proves that preparedness for all disasters is vital and neglecting even a single tip may endanger the health of people [69,70]. In the time of disasters such as earthquake or COVID-19, there is not time for preparedness, and furthermore, the communication is very difficult [71,72]. Preparing for disasters is even more vital for vulnerable people [72].

As far as gender representation is concerned, there is an equal proportion of male and female characters in such textbooks, but first responder characters. First, responding and firefighting was shown a masculine job. For enhancing the capabilities of this group (children with ID), it is needed to eliminate the inequalities including gender inequality. The intersection of inequalities including age (children), disability (ID), disasters (may result in displaced people or refugees), and gender (female) makes the most vulnerable group in any context. According to a report by Women’s Commission on Refugee Women and Children “Too often invisible, too often forgotten, and too often overlooked, refugees with disabilities are among the most isolated, socially excluded, and marginalized of all displaced populations” [73]. The intersection of gender and disability will increase vulnerability in the mentioned group [74].

Lack of role models for children with disabilities and the lack of various diversities represented in the textbooks are two weaknesses found in the present study. Children with ID in Iran are studying in special schools and such special placement in non-inclusive schools seems to be a double challenge in addition to non-inclusive textbooks. As Willis (1977) [75], and Bourdieu and Passeron (1977) [76] discussed, schools empower people who are culturally and ideologically are considered normal in society, and disable and disempower others, in the sense that children with an intellectual disability may have few opportunities to learn about safe responses to disaster situations alongside their brothers, sisters and friends in their local community. Excluding children with ID in school could be a sign that they were excluded from other opportunities available in the society for people without ID. Abbasi et al. (2016) indicated that people with disabilities are not included (both in policies and action) in disaster preparedness programs in Iran, which are accessible and available for people without ID [77].

In addition, all characters shown in the textbooks for children with ID belonged to Persian ethnic group (the major ethnic group in Iran). Other Iranian ethnic groups such as Baluch, Arabs, Lors, Kurds, etc. were not used in portraying the characters related to disasters in textbooks of children with ID in Iran. In recent decades, the importance of the inclusion of social diversity in textbooks has been emphasized [78,79]. It is important to provide a picture of disability in textbooks from two aspects: First, textbooks have the ability to reproduce societal inequalities [80]. Second, textbooks have the potential to introduce to children the social world in which they live [81]. On the other hand, the inclusion of disabilities in textbooks can improve the self-confidence and motivation of this group. However, the subject has received less attention in textbooks. For example, one study found that the representation of disability within textbooks in Iran and England is limited [82].

The representation of natural hazards in Iranian textbooks is in line

with international policies including Sustainable Development goals (SDG), and Sphere project [83,84]. The content of textbooks is also in line with SDG’s such as SDG#4 (healthy lives), SDG#11 (resilient cities), and SDG#9 (resilient infrastructure) [85]. The Sphere project was developed by the International Red Cross and Red Crescent Societies and more than 400 nongovernmental organizations in 1997 to improve and standardize disaster management. Sphere project emphasized the inclusion of disabilities in all phases including disaster preparedness, response, and recovery [86].

The topic of psychosocial support in disasters is repeated in several textbooks of children with ID in Iran with ideas such as solidarity, compassion, helping the community, and donating. Significant impacts of disasters on affected especially more vulnerable people are mental health issues and social problems [87,88]. Knowledge of self-care (mentally) and supporting others help children with ID to better cope with disasters [89].

The issue of child abuse is another important topic that has been less addressed in such resources. The risk of violence against children, including physical and sexual violence, increases during disasters [90]. Findings of another article indicate that children with disabilities, especially ID, are more likely to be abused [91,92]. It can be concluded that violence against children with disabilities is greater during disasters than other children. Thus, it is essential to address this issue in textbooks. In the textbooks for children with ID, this issue has not been directly addressed, and only one textbook provides training on how to communicate with strangers and the skill of saying “No”. However, it still needs to be more considered.

Another positive point about the representation of natural hazards in textbooks of children with ID in Iran is using the relevant textbooks in different disciplines. Different textbooks such as science, health, public knowledge, literature (Farsi), religious studies, social studies, and the like are used to transfer the concepts. In addition, the information is presented in different forms including facts, exercise, storytelling, and notes. Findings of different studies indicated that using various disciplines including art [93,94], humanities [95,96], and religious studies [97] is rather effective in transferring environmental knowledge.

Despite the availability of content about mitigation and preparedness, the authors of textbooks for students with ID in Iran did not address the response and recovery phases after disasters. It is a significant issue because everybody has to learn and exercise a disaster plans both in family and in the school. Displacement after disasters is a great risk for children with disabilities and they should learn disaster plans such as returning to a specified place for reunifying with their families [67]. A survey conducted by the United Nations indicated that only 20% of the survey population (5000 people with disabilities from 126 countries) were able to evacuate fast and efficiently in a sudden disaster [98]. Being acquainted with early warning systems in Iran is another significant issue missed in the textbooks.

5. Conclusions

The COVID-19 pandemic shows that it is important to prepare all people including children for disasters. Vulnerable groups such as children with ID are exposed to higher risk in the time of disasters. School textbooks are the key means to transfer the information of preparedness in all sorts of emergencies to all children, including children with ID. This study indicates that natural hazards are well covered in school textbooks for students with ID in Iran. In addition, it identifies gaps in knowledge that potentially leave disabled children vulnerable in a natural disaster situation. Positioning research in education by looking at the opportunities afforded through children’s literature and textbooks to enhance knowledge and understanding in this area is an important step forward. The paper sensitively locates the research in an affirmative model of disability that highlights disabled children’s agency and capabilities as learners. In doing this, it emphasises that disabled children can and indeed should learn how to prepare for disasters, and that the

time invested in education to support children's understanding of natural disasters and safe response strategies is time well spent. Ensuring that the material presented in the textbooks supports teachers to engage in effective teaching in this area is a good first step.

Textbooks in most grades cover natural hazards with different origins including geophysical (earthquakes), hydrological (floods), climatological (extreme temperatures and drought), meteorological (storms/wave surges) and biological (disease epidemics and insect/animal plagues). There are various topics of disaster risk management in the textbooks, including mitigation, preparedness, and response. However, there are not enough topics about sheltering in disasters, child abuse, and hazard response and recovery. Providing more content in the textbooks about emergency shelter, reunification, as well as hazard response and recovery will certainly help students with intellectual disabilities in the time of emergencies and reduce the risks. Disabled children's vulnerability to personal violence during disasters is another area that is rarely addressed. All children need to learn and exercise disaster plans that will enhance their safety and prevent displacement, both in family and school settings. There is a heightened risk for disabled children when these areas are not addressed in textbooks (and in associated teaching and learning contexts).

It is recommended to increase the collaboration between emergency organizations and Ministry of Education in Iran for providing updated information on natural hazards in the textbooks. In addition, it will be useful to transfer knowledge on natural hazards to students with ID via various textbooks. Portraying different groups including ethnics and people with disabilities in natural hazards the contents of textbooks is vital for shaping the identity of children with ID and motivating them to learn about natural hazards.

Contributor statement

Hamed Seddighi: Conceptualization, Methodology, Software, writing first draft, Homeira Sajjadi, Sepideh Yousefzadeh, Mónica López López: Supervision, writing, Editing, Meroy Vameghi, Hassan Rafiei, Hamidreza Khankeh: Supervision, review.

Funding

This paper is a part of a Ph.D. thesis of Hamed Seddighi at University of Social Welfare and Rehabilitation Sciences.

Ethical clearance

This paper is a part of a Ph.D. thesis at University of Social Welfare and Rehabilitation Sciences with ethics code IR.USWR.REC.1399.008 approved by the Ethics Committee of the above-mentioned university.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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