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## Risk Analysis and Risk Perception among Malaysian Caregivers: A Qualitative Study

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### Abstract

Children attending childcare centres have been linked to increasing child health and safety risks due to uncalibrated risk analysis by caregivers. The qualitative risk analysis, which is more convenient and applicable, is heavily influenced by the risk perceptions of the risk perceivers. Therefore, this study explores how Malaysian caregivers analyse risks that could occur to children attending childcare centres. Six Malaysian caregivers selected using the purposive sampling technique were interviewed individually. The interviews are transcribed and analysed using thematic analysis. The findings show that experience, knowledge sharing, and common-sense shape caregivers' risk perception. Thus, child health and safety risks could be reduced by providing evidence-based information related to injuries and illnesses of children attending childcare centres to caregivers.

**Keywords:** Childcare Service, Risk Analysis, Caregivers, Experience, Knowledge, Common-Sense

### Introduction

Through the 1989 National Women's Policy, the Malaysian government has increased women's involvement in the nation's economic operations. The adoption of this policy significantly affected child care. In Malaysia, most women take care of the family's children. Since this policy's implementation, childcare facilities and kindergartens rather than parents now take care of the children during working hours. As a result, there are now more childcare facilities nationwide. This commercial sector is vying to provide childcare services as the number of working women rises.

However, childcare centres have been linked to increasing child health and safety risks (Alkhamis & Abdulkader, 2020; Azmani et al., 2019; Davis et al., 2013; Jamaludin et al., 2018; Mutalib et al., 2018; Prabhakaran et al., 2020). Caregiver-related factors, particularly poor risk perception, were argued to influence risk analysis, which may cause child health and safety risks. For example, a study showed that risk perception only increased after an incident that gave caregivers "teachable moments" (Foettinger et al., 2020). In those cases, caregivers allowed children to involve in risky situations and only learn about the hazard after an incident occurred. This is why some caregivers had a high tolerance for risky play and believed that

safety rules were too strict (Jelleyman et al., 2019). Ariff and Schattner (1998) claimed that incidents happened when caregivers had unrealistic attitudes to injury prevention.

Accordingly, childcare providers implemented various standard operating procedures (SOP) to mitigate risks at childcare centres. However, rather than depending on the SOP, caregivers should also have realistic and accurate risk perception in order to create an effective mitigation plan. Therefore, this study explores how Malaysian caregivers analyse risks that could occur to children attending childcare centres. Understanding the underlying reasons that shape a caregiver's risk perception is the first step toward improving risk analysis. In turn, a good risk analysis based on accurate information and due consideration will help develop safe and healthy childcare centres and make informed health and safety prevention decisions.

### **Literature Review**

Risk analysis is part of risk assessment which entails estimating the likelihood and severity of risks using qualitative, quantitative, or mixed approaches (Dallat et al., 2018). Qualitative risk analysis includes brainstorming, experience, expert judgment, and intuition. Meanwhile, computer and modeling methods are common in quantitative risk analysis. Regardless of the types of risk analysis techniques, qualitative risk assessment based on experience and subjective judgment is commonly practiced in the real world.

Qualitative risk assessment is preferred due to insufficient and accurate historical data (Pascarella et al., 2021). Moreover, mathematical models are less preferred in risk assessment due to impractical assumptions required to apply in real-life situations. Furthermore, qualitative risk assessment is applicable in various situations, including newly identified risks (Mouras et al., 2020). For these reasons, qualitative risk assessment is commonly used compared to quantitative risk assessment in childcare.

For instance, a study of American home-visiting nurses and the Child Protective Service (CPS) discovered that nurses frequently relied on their clinical judgement, observation during the home visit, and client-supplied information, which may be inaccurate and biased, to form a "gut feeling" regarding a child maltreatment risk (Williams et al., 2019). On the other side, CPS staff members evaluated risk factors by looking at CPS records, criminal history, court participation, social programs like Medicaid or Food Stamps, and occasionally the child's medical record. CPS staff members also used house visit observation to acquire the necessary data.

Similarly, health professionals used qualitative risk analysis to determine the age of children that could be allowed to perform certain activities safely (Tomlinson & Sainsbury, 2004). In addition, health professionals are no different from laypeople when it comes to believing and spreading dread health rumors, despite their professional qualifications (Chua & Banerjee, 2018). This evidence showed that professional qualifications did not successfully encourage quantitative risk analysis among health professionals. Eventually, health professionals relied on a subjective understanding of child development to advise caregivers on whether to be overprotective or dangerously careless while supervising children.

In support, more than half of led outdoor activities (LOA) practitioners analyze risks using their previous experience and ask themselves what may go wrong (Dallat et al., 2018). Moreover, the LOA practitioners held staff meetings and utilized the risk assessment template as a manual to analyze risks and hazards (Dallat et al., 2018). Caregivers also determine the riskiness of a situation based on the daunting situation they experienced before professional experience (Connolly & Haughton, 2017; Foettinger et al., 2020; Ishikawa et al., 2019).

Based on the previous discussion, qualitative risk analysis is common in childcare settings. Although qualitative risk analysis is more convenient and applicable, it is heavily influenced by the risk perceptions of the risk perceivers. However, the analysts may have faulty risk perception (Demirbağ & Kilinc, 2018), optimism bias (Hogan et al., 2018), and fatalistic belief (Ngueutsa & Kouabenan, 2017) that could affect the mitigation strategies applied. Children might be in danger if caregivers fail to analyse risk appropriately. Therefore, exploring how Malaysian caregivers developed risk perception is paramount to ensure valid risk analysis, although performed qualitatively.

## **Methodology**

### ***Study Design***

This study employed a qualitative phenomenological research design that focused on interviews. The phenomenological research is applied to study a research subject, such as individuals, to gain a new understanding. It involves exploring the experience, understanding, and perspectives of others in order to discover new knowledge about a specific phenomenon (Neubauer et al., 2019).

### ***Sample***

Six caregivers from childcare centers in Selangor, a state in Malaysia with the highest number of registered childcare centers, were purposely selected as the participants of the interviews. In a qualitative study, the participants should be selected among people with the best knowledge about the research questions so that a rich description of a phenomenon could emerge to increase current understanding (Sargeant, 2012).

In this study, the researcher predetermined four sample selection criteria that are in line with the research questions. (1) They must have vast knowledge about childcare, (2) have a minimum of five years of working experience in childcare service, (3) be willing to participate in this study, and (4) have effective communication skills that enable them to articulate their opinions and express their feelings well.

### ***Research Instrument***

Table 1 shows the initial interview protocol that has been validated by experts. The interview protocol was modified depending on the data collected to ensure an in-depth understanding of the phenomenon (McGrath et al., 2019).

### ***Data Collection***

In the first step, the researcher invited caregivers that fulfilled the selection criteria to participate in the study. The researcher explained the objective of the study and the participants' anonymity in the invitation letter to gain consent. Upon gaining the participants' consent, the researcher conducted the interviews online or face-to-face, according to the participants' convenience. The data collection was ended as data saturation was reached at the sixth participant.

Table 1

*Interview Protocol*

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Section A: Opening Questions

- 1 How do you get involved in this career?
- 2 What are the roles of your current position?

Section B: Risk Analysis

- 3 What would you consider a risky situation?
- 4 What is the basis of your judgment about the riskiness of a situation?
- 5 Where have you learned about the riskiness of a situation?
- 6 How do you know a situation is riskier than the other?

Section C: Closing Questions

- 7 Of all the needs we discussed, which one is most important to you when you are analyzing the riskiness of a situation?
- 

**Data Analysis**

The interview data were transcribed verbatim and analyzed using thematic analysis proposed by Braun and Clarke (2006) due to its flexibility and ability to produce unanticipated insights. The thematic analysis comprised six phases, as shown in Table 2. After re-reading the interview transcripts, the researcher identified the significant statements from the transcripts. A second researcher performed a similar procedure and later compared their significant statements to reach corroboration. Then, the first and second researchers individually assign codes, i.e., the formulated meaning for each significant statement. The meanings formulated by both researchers were then compared and checked by another researcher to verify the consistency of the meanings. The codes that had been finalized were recorded in a codebook, a collection of codes, definitions, and examples that can be used as a reference when analyzing interview data. Both researchers analyzed all data based on the codebook, and this procedure is followed by grouping the codes into potential themes. The themes were reviewed to structure a thematic map of the data. This procedure was repeated until a rational explanation of the phenomenon was obtained without redundancy, misused, or overestimated themes. Finally, a data analysis report was produced.

Table 2

*Thematic analysis*

Phase	Description of the process
Familiarizing yourself with your data	Transcribing data (if necessary), reading and re-reading the data, and noting down initial ideas.
Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant for each code.
Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis
Defining and naming themes	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells, generating clear definitions and names for each theme.
Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, the final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

**Findings**

Six participants were involved in this study. Three of them were interviewed face-to-face, and the other three were interviewed through an online platform. Table 3 shows the details of all research participants. All participants had more than eight years of experience in childcare service.

Table 3

*Participants in interviews*

No	Participant	Gender	Position	Experiences	Interview method
1	Julie-7	Female	Principal	32 years	Physical
2	Anne-8	Female	Principal	9 years	Online
3	Ben-9	Male	Outstanding Teacher Award	10 years	Physical
4	Kate-10	Female	Teacher	8 years	Online
5	Maria-11	Female	Principal	11 years	Physical
6	Rose-12	Female	Principal	17 years	Online

**Experiences**

Based on the interviews, the researcher found that experiences are the most frequent answers given by the participants. Although caregivers from registered childcare in Malaysia received compulsory training, obviously, they still had to depend on personal experience to guide them in analyzing risks, probably because there is no evidence-based guideline for risk assessment in childcare services. Accordingly, Ben said,

*“(risk analysis was) based on experiences. Ok, when I was posted as a caregiver a couple of years ago, I wasn’t aware, for example, the use of sharp materials, the use of... we may not think that behavior (of using scissors) could result in risks, but actually it can be risky to children aged five to six years old. Because most children*



*come from the countryside, they don't have strong motor skills. For example, they do not know how to hold the scissors, not great at holding pencils, so that (injuries) can happen."*

Ben continued to explain how a caregiver could evaluate the risks after a few years of working and still learning as he said,

*"...up to this level, after ten years, we know that anything could happen. And then, if the children use scissors or anything, we pick it up quickly. Because we know that thing does not come with good things. So, as a summary, it is based on experiences."*

Previous risk occurrences could also deliver a strong impact on caregivers' perception of risks. A situation that earlier was thought to be safe could become a teachable moment to caregivers especially when it results in significant injury or harm. Such negative events develop a lasting impression on the caregivers to not simply underestimate risks. Instead, they must be cautious and continuously analyze potential risks. This argument is supported by Julie, who developed a profound risk awareness after an impactful negative experience. She said,

*"Back then, we didn't install a net at the (door) grills. So, they, the children, they were small, and they could stick their heads out. His head was in between it (the door grill). He stuck his head out, and it got stuck. It was frustrating to release him."*

On a similar note, Kate informed the researcher that,

*"If one (child) had been involved (in a harmful event), then another one plays around that area, so indeed, we will keep reminding them to stop because we know it'll be dangerous. Let's say they play at the playground, (and) they climb up to the roof, so indeed, that situation, how should I say this...because it happened to us, because there is a risk that the children will do the same."*

In further support, Kate confirmed that having more experience through longer employment could increase caregivers' competency in analyzing risks. She claimed,

*"For senior caregivers, they can...how should I put this. They are more alert, more aware of hazards compared to beginning caregivers."*

The importance of adequate experience is further underscored not only prior to risk occurrence for the preparation of a mitigation plan but also how caregivers could use such experience to manage a crisis. A crisis is a situation that demands a swift response and control to minimize risk impacts. A lack of experience in managing risks could result in severe injuries or even death in a childcare setting. Therefore, experience gives caregivers better control of a situation if a risk occurs, as they have learned from mistakes in similar encounters. Rose said in the interview,

*"Usually, for new caregivers, let's say if a child got a bump on his head, they would be clueless. They will get panic. But, for experienced caregivers, we taught them (what to do), that they'd know. They will apply ice to reduce the swelling. And they will not panic in the situation. New caregivers will get panic. Let's say if the children are running around or hurt somewhere, an experienced caregiver will take the first-aid calmly, but new caregivers will get panic and baffled and not know what to do."*

In summary, experiencing risky situations and managing crises is a significant source for caregivers' risk analysis. Such experience taught caregivers the possibilities of hazards, illness, or injuries and how to avoid them.

### **Knowledge Sharing**

Three experts suggested that knowledge sharing between senior and new caregivers helped the new caregivers to estimate potential risks. Through an interview with Julie, the principal of a childcare center, she frequently reminded the new caregivers, who had a lack of understanding of the child's development, about risks because they did not have any experiences before. Julie said,

*"I always remind the new caregivers to ensure that all children are in the class. Make sure their bags are in the right places. Then, make sure the chairs are placed on the floor when (we) are teaching them. We do not want to harm them. Push (the chair) under the table neatly. Means that teach them all to avoid the risks."*

In support, Anne stated that the new caregivers need to learn from senior caregivers as she said,

*"... meaning to see the other caregivers do and then they do after that."*

Kate, who worked for 8 years in a childcare center, also mentioned that senior caregivers need to continuously remind new caregivers about possible risks that they might overlook or underestimate due to the lack of experience with child behaviors. She stated,

*"The senior caregiver needs to alert them (new caregivers). For example, normally, new caregivers are not so alert (to risky situations). So, senior caregivers will remind them before every class or remind them of a few risks before they start the class."*

Likewise, Ben similarly claimed that he carefully guided new caregivers and not allowing them to lead the class without any help or adequate direction. Thus, he would initially pair himself with the new caregivers during learning sessions to give room for adaption to the new environment and only allow the new caregivers to lead the class when they are ready. Ben stated in the interview,

*"Usually, when the new caregivers come, I do not straight away let them handle the children. I will start a pair teaching. I will have this pair teaching with them first. Meaning that when they teach, I will assist them. I will monitor it. When I am confident, then I will leave them. They can take over the classes."*

Apart from sharing knowledge directly between caregivers, knowledge could be shared through online platforms and used as a source for making risk analyses. Based on the interview with Anne, reading about childcare risks from internet sources was also one of the methods to acknowledge the caregivers on how to analyze risks in childcare centers better. She stated,

*"There are a lot of google sources on the internet about the other schools. Caregivers can take the initiative about this (risks) from the internet."*

This statement was also supported by Maria as she said that experiences and reading provided knowledge about risky situations at the childcare center as she said,



*“Experiences and reading are both important. If we just have experiences without any information, we cannot make it. (from) experiences and reading, we can discover information.”*

Based on the interviews, new caregivers who did not have adequate exposure to childcare risks were considered less competent in making sound judgments about the possibility of risk occurrence. Moreover, children have different personalities and behaviors, that new caregiver may not fully understand how these factors could result in risky situations. Therefore, knowledge sharing between senior and new caregivers in the online platform is crucial in guiding caregivers in making more accurate risk analyses and avoiding harmful circumstances.

### **Common Sense**

Although knowledge sharing is ideal for improving new caregivers' risk analysis, the combination of multifactor could lead to unlimited and unforeseen risky events. In such cases, caregivers rely on common sense to analyze risks. Common sense is a sound and careful judgment based on a simple perception of the circumstances or facts. People depend on common sense, especially when prior knowledge or experience about a situation requiring prudent decision is absent.

In a childcare setting, new caregivers are expected to decide about the riskiness of a situation, although they do not have adequate exposure to the outcomes of events, which leads them to resort to using common sense in analyzing risks. Based on the interview, Kate revealed that common sense is also an important aspect besides experiences, as she said,

*“Even without any experiences, but if we sense danger, usually a caregiver's common sense will... will stop the risks from occurring.”*

During the interview with Maria, she explained that caregivers need to depend on their common sense in analyzing risks because not all risky situations look dangerous from the beginning. For example, playing could be harmful if it involves risky behavior. She said,

*“We cannot expect what to happen. So, caregivers themselves must always monitor (the children) during lessons. Sometimes, a pencil can be hazardous. It is afraid that they will use it to stab. Because it is sharp.”*

In parallel, Julie explained her experience of caring for children during playtime. Normal child behavior that was supposed to be safe unfortunately resulted in injuries. She said,

*“It (pencil) almost hit the eye. (They) were playing and making jokes with friends. That was how joking around caused injuries. But it was not bad. Sometimes, (it caused) swelling.”*

Due to varying risk perceptions and considering the possibility that some caregivers may not have sufficient experience or knowledge, the Ministry of Education enforced a guideline to minimize childcare risks. For example, childcare providers are expected to comply with toy guidelines exerted by the ministry to reduce the possibility of illness or injuries caused by toys. Despite that, childcare providers could also purchase toys of their own choice, but they must be responsible for the purchase. In this context, it is common sense for caregivers to

rely on manufacturers' recommendations of appropriate child age for the toys if they do not have experience or knowledge about the riskiness of the toys. Ben said,

*"In preschools, for every piece of equipment we use, there is an SOP set by the ministry. It means that there are certain types (of things that) cannot be used. For example, dough is allowed, but plasticine is not allowed. Except for additional equipment, for example, toys. When we buy toys, we must see (evaluate) their safety. Some (toys) have their colors run out, and some are not suitable for 5-years old children. So, when buying toys, academic toys, at the stores, the suitability for certain child ages is stated. So, we must follow that (recommendation). Usually, when caregivers perhaps overlook (the manufacturers' recommendation), children may not know how to use or don't have enough skills to use it, (then) it (risks) can happen."*

Overall, although common sense may not provide accurate risk analysis, however, it is the least that a caregiver can rely on when making an assessment, especially when prior knowledge and experience are not available.

### **Discussion**

This study found that caregivers depend on experience, knowledge sharing, and common sense in analyzing childcare risks because there is a lack of evidence-based guidelines to help caregivers analyze risks. This finding is supported by previous risk researchers who argued that risk perception could be understood from two different perspectives, i.e., risk as analysis and risk as feelings (Tompkins et al., 2018). The notion that peoples logically judge risks based on the likelihood and severity of the risks materialized is called risk analysis. Conversely, making risk judgments based on affect or emotion about possible negative risk outcomes suggests the risk as feelings.

In this study, the interviews indicated that caregivers judge risks heuristically based on their feelings that were stimulated by experience, knowledge sharing, and common sense. According to Siegrist and Arvai (2020), in order to analyze risks objectively, the risk perceivers, i.e., caregivers, require cognitive accessibility to target attributes such as the likelihood of risks to make an informed decision. However, the caregivers had to resort to the substitute of the target attribute if it is not cognitively accessible while judging risks. The substitute of target attribute includes the vivid experience of hazard that they could think of. Therefore, awareness, exposure, and understanding mechanism underlying a particular hazard are crucial in shaping one's risk perception and thus, his judgment of risks (Siegrist & Arvai, 2020).

This argument is in line with the psychometric paradigm, which explains that familiarity with risks affects risk perception (Slovic, 1992). Risks that people have adequate knowledge about it is considered familiar. Accordingly, risk tolerance increases when risk becomes more familiar to people. For example, tolerance towards COVID-19 risk was low at the beginning of the pandemic because people were not familiar with how this virus spread, how many people could be infected, how severe the infection and how to cure the illness. As a result, aggressive measure was taken worldwide by implementing a lockdown. Nevertheless, with more experience coping with COVID-19 infection, new knowledge was obtained, and information was distributed widely to educate people about this disease. Eventually, risk perception is generally reduced to the point where people are willing to take the risk to uplift the lockdown.

For childcare services, risk analysis is also subject to the risk perceptions of the people involved in making the judgment. In other words, caregivers' experience, knowledge sharing,

and common sense are important factors that contribute to familiarity with risks in order to analyze childcare risks more accurately. However, due to an unlimited number of events that could lead to health and safety risks, there is a lack of focus on caregivers' formal training about health and safety risks. As a result, caregivers' risk perception is gradually and informally developed by experiencing "teachable moments" (Foettinger et al., 2020; Ishikawa et al., 2019), i.e., when a caregiver witnesses a child getting injured or falling sick during her care. This study found that this impactful experience is later shared with less experienced caregivers through informal knowledge sharing to avoid repeating risky events.

It is because less experienced caregivers usually have inadequate professional experience in estimating and controlling child health and safety risks (Connolly & Haughton, 2017). Moreover, what they thought to be safe may turn out otherwise due to faulty risk perception and optimism bias, that is, the belief that negative events are less likely to happen to them (Demirbag & Kilinc, 2018; Hogan et al., 2018; Siegrist & Arvai, 2020). In a different vein, caregivers could have developed a fatalistic belief that a perceived child's health and safety are beyond one's control but depend on chance, fate, luck, and God *per se* (Ngueutsa & Kouabenan, 2017).

For risk encountered for the first time, the caregiver does not have any knowledge or experience to be used as a basis for judging the likelihood and severity of the risk. Therefore, common sense is used as a basis for the relative analysis of risks. Common sense does not enable probabilistic risk estimation to be produced, but caregivers may be able to express their sense of risk in terms of the reasons that they feel at risk (Kelly et al., 2005). For instance, a caregiver may feel a child has a higher risk of falling because he has impulsive behaviour. The above arguments, therefore, concludes that experience, knowledge sharing, and common sense are the primary basis for judging risks among caregivers.

### **Conclusion and Recommendation**

This study aims to explore how Malaysian caregivers analyse risks that could potentially occur to children attending childcare centres. Overall, it can be reasonably concluded that experience, knowledge sharing, and common-sense shape caregivers' risk perception, which eventually affects an individual's risk analysis. Accordingly, child health and safety risks could be reduced by providing evidence-based information related to injuries and illnesses of children attending childcare centres to caregivers. In the future, more studies are needed to quantitatively verify the influence of the identified factors on shaping risk perceptions among caregivers. Moreover, this study did not control individual characteristics of the caregivers, such as academic qualification, culture, values, and religion. Thus, exploring the roles of these characteristics in developing one's risk perception is expected to reveal interesting and useful insights.

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