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Islamic values and health literacy in the environmental practices of migrant children in Malaysia

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Abstract

Migrant children in Malaysia often depend on community-based learning centers for education, everyday health, and environmental learning. Health literacy can help children understand why hygiene practices matter, while Islamic values can give these practices religious meaning, but understanding does not always lead to regular action. This study examines how health literacy and Islamic values relate to hygiene and environmental practices among migrant children at the *Pantai Dalam* Learning Center in Kuala Lumpur, Malaysia. A qualitative case study was conducted from September to November 2025 with ten children aged 7–12, two educators, and two parents. Data were collected through observation, field notes, interviews, and documentation. Children's average observation score increased from 1.3 at the beginning of the study to 3.6 in November. They became better able to explain the health reasons for handwashing, cleanliness, careful water use, and waste disposal, while *ṭahārah* and *amānah* connected these practices with Islamic teaching. Repeated activities and educator examples accompanied more regular practice, although two children showed slower change and home practices were less consistent. Regularity also depended on adult examples, routines, and available facilities. Non-formal learning centers should combine health explanations, Islamic values, repeated practice, and suitable facilities.

Keywords: health literacy; Islamic values; migrant children; environmental practices; Malaysia.

Introduction

Many migrant children in Malaysia do not have the same access to formal schooling as Malaysian citizens. Legal documentation, family resources, and school admission rules affect whether non-citizen children can enter formal schools and continue their education (Mustaffa et al., 2022). Children without secure access to public education often rely on alternative or community-based learning centers, while family circumstances and limited educational opportunities may further affect their participation in learning (Loganathan et al., 2022, 2023). For Indonesian migrant children, these learning spaces can also

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provide opportunities to learn everyday health practices, including handwashing, cleanliness, and sanitation (Trisofirin et al., 2023). The learning center provides a setting where academic learning takes place alongside everyday practices related to hygiene, health, and care for the surrounding environment.

Research on children's health literacy shows that children need information they can understand and use in everyday life (Otten et al., 2022). Research on environmental education reaches a similar conclusion. Learning can improve knowledge, attitudes, intentions, and behavior, although these changes do not always occur at the same pace (van de Wetering et al., 2022). Islamic education adds another dimension by connecting cleanliness, healthy living, and care for the environment with religious responsibility (Wakhidah & Erman, 2022). These studies explain important aspects of how children learn about health, environmental care, and religious responsibility. However, less is known about how health literacy and Islamic values come together in the everyday hygiene and environmental practices of migrant children in non-formal learning settings. The studies above give greater attention to knowledge, attitudes, and educational interventions than to how children repeatedly perform these practices over time and how the regularity of their practices may change under different living and learning conditions.

This study examines these issues at the *Pantai Dalam* Learning Center in Kuala Lumpur, Malaysia, from September to November 2025. It focuses on children's hygiene and environmental practices; how children explained the health reasons for these practices; Islamic values related to cleanliness and responsibility introduced during learning activities; and changes in the regularity of these practices during the study. The study asks two questions. How do health literacy and Islamic values help migrant children understand hygiene and environmental responsibility? How does the regularity of these practices develop through repeated everyday activities and under different living and learning conditions during the study? These questions make it possible to distinguish between children's understanding of a practice and how regularly they carry it out in everyday situations.

This article begins with the argument that understanding gives children reasons for an action, but understanding alone does not necessarily make that action regular. Health literacy can help children understand why washing hands, keeping shared spaces clean, managing waste, and using water carefully matter for health and well-being. Islamic values can strengthen these reasons by connecting cleanliness with *ṭahārah* and responsibility with *amānah*. Yet understanding these reasons does not automatically

make them part of everyday practice. Repeated practice may help children become familiar with an action and incorporate it into daily routines, while adult examples, available facilities, and the conditions in which children live and learn can make regular practice easier or more difficult to maintain. The article argues that the relationship between health literacy, Islamic values, and everyday practice is best understood by considering both the meanings children attach to their actions and the conditions that make those actions easier or harder to perform regularly.

Literature Review

Knowledge, attitudes, intentions, and behavior do not always develop in the same way or at the same pace. Children may understand what they are expected to do and recognize why an action matters without performing it regularly in everyday situations (Liu & Green, 2024; Świątkowski et al., 2024). For migrant children, this distinction is especially important because the places where they learn and live may provide different routines, facilities, and forms of adult support. Studies of school-based support for migrant students show that children's health and learning are influenced by these surrounding conditions as well as by the information they receive (Meroni & Velasco, 2023). Knowledge provides an important basis for action, but whether an everyday practice becomes regular also depends on the conditions in which children are expected to carry it out.

Health literacy provides one way to explain how children understand everyday health practices. Otten et al. (2022) show that children develop health literacy when information is understandable, connected to their experience, and accompanied by opportunities to use what they learn. School-based research similarly suggests that health literacy can strengthen children's ability to understand health information and consider actions that support their health (Khanal et al., 2025). However, opportunities to use such knowledge are not equally available. Rueskov et al. (2026) show that children and adolescents from disadvantaged backgrounds may face social and economic conditions that make recommended health practices more difficult to carry out. An Indonesian study likewise links health literacy with clean and healthy living practices, although its emphasis is stronger on knowledge and reported behavior than on repeated observation of everyday action (Asmawati, 2025). Health literacy helps explain why children understand a practice, but it does not by itself explain why the practice becomes regular.

Repeated practice provides another part of the explanation, although regular repetition should not be equated with an established habit. Gardner (2015) argues that

habit develops when repeated behavior becomes strongly associated with recurring situations and cues. Performing an action frequently is insufficient if the circumstances surrounding the action remain unstable. More recent evidence also shows considerable variation in the time required for habits to develop, depending partly on the frequency of repetition and the stability of the situation in which the behavior occurs (Singh et al., 2024). This distinction is important in educational settings. Duijster et al. (2020), for example, found that children could participate regularly in hygiene activities at school without necessarily performing the same practices independently in other settings. Repeated practice may increase regularity within a particular setting, but it does not by itself demonstrate that the action has become a lasting habit.

Islamic education can provide an additional reason for children to understand cleanliness and environmental care as meaningful responsibilities. Wakhidah and Erman (2022) show that Islamic religious education in Indonesia includes themes related to personal hygiene, healthy living, natural resources, and environmental care. In this study, *ṭahārah* is used to understand cleanliness as a religious responsibility, while *amānah* is used to interpret care for shared spaces and resources as a responsibility before God. However, religious meaning does not necessarily produce consistent behavior. Khoirurrijal et al. (2026) found that high religiosity did not always correspond with equally strong ecological awareness, while Zafar and Abu-Hussin (2025) show that the relationship between religiosity and environmental concern varies according to social conditions. Islamic values can strengthen the reasons children associate with cleanliness and environmental responsibility, while the regularity of their actions may still depend on the situations in which those actions are performed.

These studies indicate that the continuity of children's practices depends partly on the settings in which the practices take place. Environmental knowledge and behavior do not necessarily change at the same pace (Liu & Green, 2024). Duijster et al. (2020) found that hygiene activities performed regularly at school did not always continue independently at home, while Jaime et al. (2023) found that environmental learning among children did not automatically lead to similar changes within the family. Such differences may reflect variations in routines, available facilities, adult examples, and opportunities to repeat an action. The distinction between a learning center and the home is important because the same child may encounter different conditions in each setting. Examining where a practice occurs helps explain why an action may become regular in one situation while remaining less consistent in another.

This study uses these distinctions to examine three related aspects of children's everyday practices: what children understand, how regularly they act, and the conditions under which their actions take place. Health literacy is used to examine the health-related reasons children give for hygiene and environmental practices, while *ṭahārah* and *amānah* help identify the religious meanings associated with cleanliness and responsibility. Repeated action is examined through its regularity without assuming that a lasting habit has already developed. The analysis also considers the routines, adult examples, and available facilities surrounding the children because these conditions may make a practice easier or more difficult to maintain. This approach makes it possible to examine changes in everyday practice without assuming that knowledge automatically produces action or that repeated behavior in one setting will necessarily continue in another.

Method

This study used a qualitative case study design to examine the hygiene and environmental practices of migrant children at the *Pantai Dalam* Learning Center in Kuala Lumpur, Malaysia (Creswell & Poth, 2018). The research was conducted from September to November 2025 and involved ten migrant children aged 7–12 who regularly attended the learning center, two center managers who also worked as educators, and two parents. Participants were selected purposively because they were directly involved in the children's learning and everyday activities. An initial observation at the beginning of the study provided a reference point for examining subsequent changes. Permission to conduct the study was obtained from the *Pantai Dalam* Learning Center. The parents or guardians of all participating children provided consent for their children's participation and for the use and publication of photographs and other research documentation. The children were informed about the study in a language appropriate to their age and agreed to participate. Participant codes were used when reporting interview and observation data.

Data were collected through structured observation, field notes, interviews, and documentation of learning activities. During the three months, children learned about handwashing, cleanliness, waste, and water use through dialogue, visual stories, explanations, and everyday activities. The learning activities also introduced *ṭahārah* in relation to cleanliness and *amānah* in relation to responsibility for shared spaces and resources. Children practiced washing their hands, cleaning the learning area, disposing of and sorting waste, and using water carefully. The first and second authors observed these activities every week and asked the children about the reasons for some of their

actions. Educators provided information about activities and practices at the center, while parents described what the children did at home. The researchers did not observe the children directly in their homes.

A four-level observation rubric recorded children's practices in personal hygiene and sanitation, waste management, water use, and responsibility for cleanliness and the environment in relation to Islamic values. A score of 1 indicated that a practice was rarely or not yet observed and required direct guidance; 2 indicated that it appeared but still depended on reminders or educator support; 3 indicated regular performance with only occasional reminders; and 4 indicated regular performance without immediate reminders or direct guidance. Two experts in Islamic character education reviewed the rubric before data collection, and it was tried with three children outside the study group to check whether the indicators could be observed clearly. Before observation began, the first and second authors discussed the indicators and scoring criteria. They recorded the children's practices each week and resolved scoring differences by reviewing field notes and discussing what had been observed. At the end of each month, they agreed on one score that best represented each child's level of practice. Group averages were calculated from the individual monthly scores. Scores for each of the four practice areas were also averaged for the ten children at each observation point to describe changes by area.

Observation records, field notes, and interviews were analyzed through data condensation, data display, and conclusion drawing (Miles et al., 2014). Information from children, educators, parents, and field observations was compared to identify consistencies and differences in the data. The monthly scores described how regularly particular actions appeared during the three-month study and were not used to claim a direct causal effect of the learning activities or to show that lasting habits had developed. Information about practices at home came from parent interviews and did not provide the same evidence as direct observation. Photographs documented activities visible at specific moments and were not used to indicate how frequently an activity occurred. These limits were considered when interpreting changes in the children's scores and differences between practices observed at the learning center and those reported at home.

Results

Children's Hygiene and Environmental Care Practices

Initial observations showed that the children's hygiene and environmental care practices were not yet performed regularly. The group's average score at the beginning of the study was 1.3 on a four-level scale. Personal hygiene and sanitation scored 1.5, water

use 1.5, waste management 1.2, while responsibility for cleanliness and the environment in relation to Islamic values received the lowest score, at 1.0. At this stage, most actions still required guidance or reminders from educators. Table 1 summarizes the initial observations in the four areas.

Table 1

Initial Observation of Children's Hygiene and Environmental Practices

Observed practice	Initial score	Practice observed
Personal hygiene and sanitation	1.5	Some children had begun to practice basic hygiene, but reminders were still needed.
Waste management	1.2	Waste was not disposed of regularly, and children often still needed guidance.
Water use	1.5	Children had begun to pay attention to water use, but reminders were still needed to use only what was necessary.
Environmental responsibility linked to Islamic values	1.0	Responsibility for cleanliness and the environment was not yet visible regularly in everyday actions.
Average	**1.3**	**Most practices still depended on guidance.**

Note: Research observation data, 2025.

Field notes and observations provide a more concrete picture of these scores. At the beginning of the study, food wrappers were still found in desk drawers, on the classroom floor, and around the learning area. Water use was also not always controlled; the observation rubric recorded that taps could be left running and that children still needed reminders to use water carefully. Handwashing with soap was also not yet carried out consistently without guidance. Interviews with the center manager provided additional context. The manager mentioned limited health information and differences in the examples children encountered at home as conditions related to their everyday practices. This information is used here to describe the children's situation and does not establish that conditions at home directly caused the initial observation scores.

The evidence shows that the main issue at the beginning of the study was the irregularity of practice, not an inability to perform hygiene or environmental actions. The children could follow instructions, but several actions still depended on reminders and supervision. Differences among the four areas also show that practices related directly to personal hygiene and water use appeared slightly more often than waste management and environmental responsibility, linked to Islamic values. These initial observations provide a point of comparison for examining how the children's practices changed during the health literacy activities, Islamic value learning, and daily routines in the following months.

Health Literacy and Islamic Values in Hygiene Practices

During September, the learning activities began to connect everyday hygiene practices with simple health explanations and Islamic values. Children discussed handwashing, cleanliness, waste disposal, and water use through dialogue, visual stories, and examples given by educators. Cleanliness was connected with *ṭahārah*, while care for shared spaces and resources was introduced through *amānah*. Figure 1 shows two health and hygiene learning activities conducted at the *Pantai Dalam* Learning Center. By the end of September, the group average had increased from 1.3 to 2.0. Personal hygiene and sanitation increased from 1.5 to 2.2, water use from 1.5 to 2.1, waste management from 1.2 to 2.0, and environmental responsibility linked to Islamic values from 1.0 to 1.8. The children were beginning to wash their hands, dispose of waste in the provided bins, and pay more attention to water use, although many of these actions still appeared more regularly when educators gave reminders or direct examples.

Figure 1

Health and Hygiene Learning Activities at Pantai Dalam Learning Center

Activity	Description	Photograph
Small-Group Health and Hygiene Discussion	Children discussed everyday health and hygiene practices with the facilitator, including the reasons for maintaining personal and environmental cleanliness.	
Group Health and Hygiene Learning Activity	Children participated in a group learning activity that introduced health and hygiene practices and encouraged them to connect cleanliness with their everyday activities.	

Note: Research documentation, September 2025.

The children's explanations also show changes in how they understood some hygiene practices. Student S.A. described how an explanation about soap changed the way he washed his hands:

> *"I used to wash my hands only with water, but now I always look for soap after the teacher told me that germs do not die without soap. I now understand that keeping clean is very important to prevent stomach aches"* (Student S.A., personal communication, September 2025).

Student N.H. described a similar experience. Handwashing with soap had not been a regular practice at home, while the educator demonstrated it repeatedly at the learning center. N.H. explained that washing without soap gradually began to feel incomplete and that the hands still felt dirty. These responses show that the children were beginning to connect handwashing with health reasons that they could explain in their own words. The evidence at this stage is clearest in relation to health understanding and repeated examples from educators. The learning activities also introduced *ṭahārah* and *amānah*, but the children's interviews provide less direct evidence that religious meaning had already become the main reason for their actions.

Field observations in September show that greater understanding did not yet produce the same regularity in every situation. One field note recorded:

> *"When the teacher is in the classroom, they compete to throw their snack wrappers into the color-labeled bins. But when the teacher leaves the classroom for a while, several children go back to dropping plastic wrappers under the desks"* (Field Note No. 3, September 18, 2025).

The center educator described the same dependence on direct examples:

> *"The children here rely heavily on visual examples. We practice clean and healthy living behaviors with them. Without the teacher's direct involvement, instructions alone will simply pass them by"* (Educator A.M., personal communication, September 2025).

These observations show that children were beginning to engage in several hygiene and environmental practices more often, but educator presence, reminders, and shared activities still mattered in September. The change was visible, although the children had not yet reached the same level of regularity when supervision was reduced.

Daily Practice and Children's Environmental Responsibility

During October and November, the children carried out hygiene and environmental activities more regularly at the learning center. The group average rose from 2.0 in September to 2.9 in October and 3.6 in November. The individual scores also show that the change was not the same for every child. By November, eight of the ten children had reached a score of 4, while M.F. and R.A. remained at 2. Table 2 presents the individual observation scores from the initial observation through November. This variation is important because it shows that more regular practice became common within the group but did not develop at the same pace for all children.

Table 2

Changes in Individual Observation Scores During the Study

Student	Initial	September	October	November
A.N.	1	2	3	4
S.A.	2	2	3	4
M.F.	1	1	2	2
K.R.	1	2	3	4
A.D.	1	2	3	4
R.A.	1	2	2	2
N.H.	2	3	3	4
F.A.	1	2	3	4
I.M.	1	2	3	4
Z.E.	2	2	4	4
Average	**1.3**	**2.0**	**2.9**	**3.6**

Note: Research observation data, 2025.

Figure 2

Children Taking Part in Daily Hygiene and Cleaning Activities at Pantai Dalam Learning Center

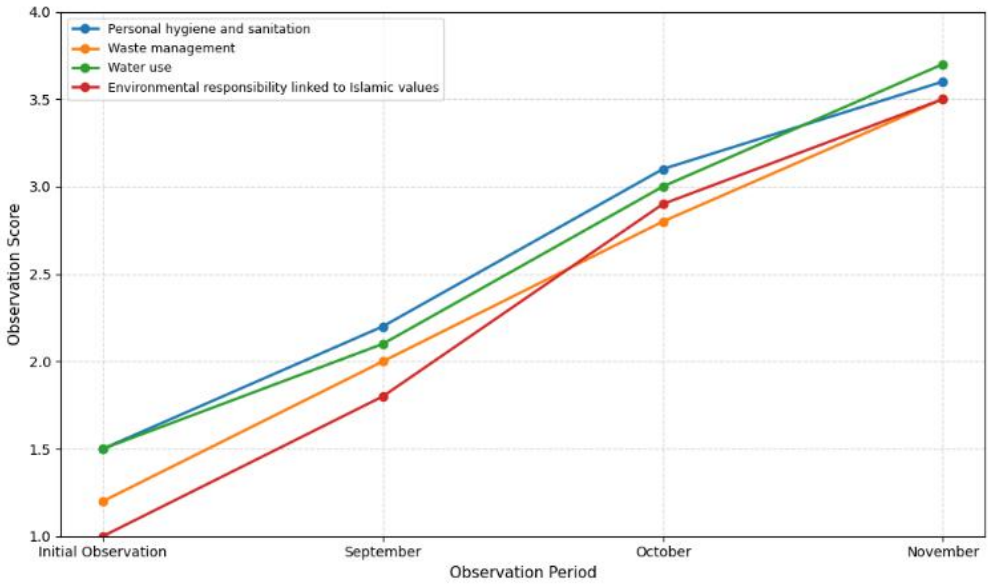
Activity	Description	Photograph
Cleaning the Learning Area	Children took part in cleaning the learning area, including sweeping the floor and keeping shared spaces tidy.	
Handwashing Practice	A child practiced handwashing using the available facility as part of everyday hygiene activities at the learning center.	
Waste Disposal Practice	A child placed waste in the designated bin as part of the routine for keeping the learning environment clean.	

Note: Research documentation, November 2025.

By October and November, several hygiene and environmental practices appeared more regularly at the learning center. Children took part in cleaning duties, disposed of waste in the available bins, used water more carefully, and helped keep the learning area clean. Some actions were also observed without an immediate instruction from the educator, including picking up litter and turning off taps. Figure 2 documents several daily hygiene and cleaning activities carried out at the learning center in November. However, the individual scores show that the change was not uniform. M.F. and R.A. remained at a score of 2 while eight other children reached 4 by November. Their results show that repeated activities did not lead every child to the same level of regularity. The November observations provide evidence of more regular practice within the learning center, while differences among children remained visible.

Figure 3

Changes in Children's Hygiene and Environmental Practices



Note: Research observation data, *September–November 2025*.

Changes in the four areas followed a similar pattern during the study. Personal hygiene and sanitation increased from 1.5 to 3.6, waste management from 1.2 to 3.5, water use from 1.5 to 3.7, and environmental responsibility linked to Islamic values from 1.0 to 3.5. Figure 3 presents these changes at the four observation points. The higher scores at the learning center did not always appear in the same way at home. One parent explained:

> *"At the learning center, she is diligent about sorting bottles. But at home, in our small place near the flats, there is only one bin and everything is mixed together. She goes back to throwing plastic in the corner because that is what the home environment is like"* (Mother of Student A.N., personal communication, November 12, 2025).

The parent's description shows how the same practice could become less consistent when the child returned to a setting with different facilities and routines. The three-month observations show increasingly regular hygiene and environmental practices at the center, but the evidence does not show that the same level of regularity had already extended to the home or would continue after the study ended.

Discussion

Children's hygiene and environmental practices became more regular during the study, but this change cannot be explained by knowledge alone. The children became better able to explain why handwashing, cleanliness, careful water use, and proper waste disposal mattered for health. *Ṭahārah* and *amānah* also connected cleanliness and responsibility with Islamic teaching. These understandings developed alongside repeated activities, examples from educators, and regular opportunities to practice the same actions at the learning center. However, the pattern was not the same for every child. Two children showed slower change, and practices reported at home were less consistent than those observed at the center. Children increasingly understood why the practices mattered, while the regularity of their actions still varied according to the situations in which they acted.

The importance of the learning environment is especially relevant for migrant children who depend on non-formal or community-based education. Studies in Malaysia show that many non-citizen children rely on alternative learning centers because their access to formal schooling remains limited, while family resources and everyday living conditions can affect their educational experience (Loganathan et al., 2023). Research on migrant students also shows that health learning works best when schools pay attention to daily routines, physical surroundings, and support from adults around the child (Meroni & Velasco, 2023). The *Pantai Dalam* case adds a more detailed picture of what this means in everyday practice. Children could follow hygiene and environmental routines more regularly when soap, waste bins, clear instructions, and educator examples were available. At home, the same practices could become more difficult when facilities and routines were different. The learning center was important not simply because it provided information, but because it gave children a place where the practices could be repeated.

Health literacy helps explain another part of the change. Previous research shows that children are more able to use health information when they can understand it and connect it with actions in daily life (Otten et al., 2022; Khanal et al., 2025). The children in this

study began to explain handwashing through soap, germs, cleanliness, and prevention of illness. Islamic values added another reason for the same practices. Research on Islamic religious education shows that cleanliness and care for the environment can be connected with religious responsibility (Wakhidah & Erman, 2022). However, the evidence from *Pantai Dalam* is stronger for children's understanding of health reasons than for a fully developed religious motivation behind every action. This distinction matters because studies of Muslim communities also show that religiosity does not automatically correspond with stronger environmental concern or behavior (Khoirurrijal et al., 2026; Zafar & Abu-Hussin, 2025). In this case, *ṭahārah* and *amānah* helped give moral meaning to the practices being taught, while the children still relied on everyday examples and opportunities to put those meanings into action.

Repeated practice also needs to be understood carefully. Habit research shows that frequent behavior alone does not establish that a stable habit has formed; regularity develops through repeated action in situations that provide familiar cues and opportunities (Gardner, 2015; Singh et al., 2024). This distinction is visible in the present study. Most children became more regular in cleaning, handwashing, waste disposal, and water use at the learning center, but two children showed slower change, and the practices reported at home were less consistent. Similar differences have been found in school-based hygiene research, where activities performed regularly at school did not always become independent practices in other settings (Duijster et al., 2020). Jaime et al. (2023) also found that environmental learning among children did not automatically produce similar changes within their families. The *Pantai Dalam* results show why repeated activity and the place where it occurs need to be considered together. A practice can become familiar in one setting while remaining difficult to maintain elsewhere.

The *Pantai Dalam* case adds a more specific distinction to earlier studies: health understanding, religious meaning, and regular practice developed alongside one another, but they did not develop at the same rate or remain equally stable in different settings. Previous studies show that environmental education can improve children's knowledge, attitudes, intentions, and behavior, although these outcomes may change differently (van de Wetering et al., 2022; Świątkowski et al., 2024; Liu & Green, 2024). In this study, children became better able to explain the health reasons for hygiene and environmental practices, while evidence that *ṭahārah* and *amānah* had become the main reasons for their actions remained more limited. Regular practice also depended on repeated opportunities, adult examples, and available facilities. This helps explain why practices observed regularly at the learning center could become less consistent at home. The case

adds detail to earlier research by showing that what children understand, the meanings they associate with an action, and how regularly they perform it may develop differently when everyday conditions change.

Non-formal learning centers can draw several practical lessons from these findings. Health information is more useful when educators connect it with actions that children can carry out every day, such as washing their hands with soap, disposing of waste properly, and using water carefully. Islamic values such as *ṭahārah* and *amānah* can also help explain why cleanliness and care for shared spaces matter in religious life. Educators can support these practices by showing them consistently, repeating them in daily routines, and making sure that children have soap, waste bins, and water facilities when they need them. Research in settings with limited resources also points to the value of linking health learning with practical activities (Omura et al., 2024). The *Pantai Dalam* experience shows that information becomes more useful when children have a place to practice it regularly. These suggestions are most relevant to learning centers that work with similar groups of children and face similar everyday conditions.

Conclusion

Health explanations helped children understand why handwashing, cleanliness, careful water use, and proper waste disposal mattered for their health. *Ṭahārah* and *amānah* also connected cleanliness and responsibility with Islamic teaching. During the three-month study, several of these practices became more regular at the learning center as children repeated them in daily activities and followed examples from educators. The same level of regularity was not always reported at home, where routines, facilities, and adult examples could be different. The findings show that children's understanding developed alongside changes in practice, but the continuation of those practices also depended on the situations in which the children acted.

The study shows that understanding an action and carrying it out regularly are closely related, but they are not the same. Health learning can help children understand why a practice matters, while Islamic values can connect cleanliness and environmental care with religious responsibility. The findings also show that these understandings become more visible in practice when children have repeated opportunities, examples from adults, and suitable facilities around them. When those conditions change, the same action may become less regular. Progress observed in a learning center does not necessarily mean that the same practice has become a lasting habit in every setting. For

migrant children in particular, everyday practice is shaped by both what they learn and the situations in which they are able to act.

The study followed ten children in one learning center for three months, so the findings remain closely tied to the *Pantai Dalam* setting. Direct observation took place mainly at the learning center, while information about practices at home came from parent interviews. The study ended in November 2025 and did not follow the children afterward, so it cannot show whether the observed practices continued over a longer period. It also cannot establish whether similar patterns would appear in other migrant learning centers with different facilities, routines, or family circumstances. Future research could follow children for a longer period, include several learning centers, and observe practices in both learning and home settings. Such longitudinal observation would make it possible to see more clearly when everyday practices continue, when they weaken, and how they change when the conditions around children are different.

AI Usage Declaration

The authors confirm compliance with the Al'Adalah: Journal of Islamic Studies AI policy. Generative AI tools were used during manuscript preparation to support language editing, clarity, and revision of draft text. All sources, data, analysis, and interpretations were independently checked by the authors, who take full responsibility for the final content.

Author Contribution Statement

The authors were responsible for the conceptualization and design of the study, data collection and analysis, interpretation of the findings, preparation of the original manuscript, proofreading, and substantive revision. The authors reviewed and approved the final manuscript and take full responsibility for its content.

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The authors declare no conflicts of interest related to the research, authorship, or publication of this article.

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