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Perception-Based Evaluation of the S.E.E.D Training Module on Management Skills Development for Dietitians Using the ADDIE Framework

Evaluasi Berbasis Persepsi terhadap Modul Pelatihan S.E.E.D dalam Pengembangan Skil Manajemen bagi Dietisien Menggunakan Kerangka ADDIE

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ABSTRACT

Background: As the role of dietitians in clinical and operational settings continues to expand, administrative and management skills have become increasingly important. Therefore, the Skills Enhancement for the Excellent Dietitians (S.E.E.D) training module was developed to strengthen dietitians' management competencies.
Objectives: This study was conducted to evaluate the newly developed Skills Enhancement for the Excellent Dietitians (S.E.E.D) training module through participants' perception-based assessment of management skills development, guided by the ADDIE framework.
Methods: A descriptive cross-sectional study was conducted in April 2021 to evaluate S.E.E.D training module using a structured questionnaire. Fifteen government dietitians (U41 and U44) with at least two years of work experience were purposively selected. The module was evaluated using a government assessment form covering five aspects: (i) content, (ii) implementation, (iii) technical and methodology, (iv) benefits, and (v) facilitator effectiveness.
Results: Participants reported high satisfaction across all aspects, with mean scores for training content ranging from 4.9 to 5.0. Implementation scores varied between 4.7 and 4.9, with Session 3 (Managing Challenging Behavior) receiving the highest rating (4.9 ± 0.27), while Session 4 (Motivation) had the lowest (4.5 ± 0.33). Most participants indicated being "Very satisfied" or "Satisfied" with the training techniques used.
Conclusions: The S.E.E.D training module was well received by participants and demonstrated a high level of satisfaction, aligning with the evaluation objectives. These results provide a strong foundation for further improvement of the module before wider implementation.

INTRODUCTION

In the rapidly evolving landscape of healthcare, dietitians are no longer confined to traditional clinical roles. Management skills are essential for dietitians to deliver effective nutrition services across various settings, including clinical, community, and food service environments. However, many dietitians face gaps in management skills, which can hinder their professional growth and effectiveness in healthcare settings. As outlined by Doley et al. (2019), most competent dietitians focus primarily on clinical tasks, often neglecting essential management competencies such as budgeting and team coordination[1]. To address these gaps, dietitians can benefit from organizational training and mentorship opportunities, helping them develop management skills necessary for progression to proficient and expert levels. Developing these skills not only enhances their ability to lead and collaborate within interdisciplinary teams but also contributes to improved healthcare outcomes for clients, patients, and broader populations. Instead, they are increasingly tasked with vital administrative and management responsibilities. This shift necessitates comprehensive training programs designed to enhance their competencies beyond clinical expertise. The profession of dietetics involves extensive education and training in food science, nutrition science, and dietetics practice[2]. Dietitians are responsible for maintaining their competence through self-assessment and professional

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development to enhance their knowledge and skills. The Standards of Professional Performance (SOPP) resources emphasize the varied roles of dietitians, including administrative responsibilities for clinical dietitians within organizations or hospitals, as factors contributing to their performance and professional growth[1].

Effective healthcare management is pivotal for achieving healthcare objectives by efficiently utilizing human, financial, and technical resources. This includes strategic and operational activities such as supply chain management, human resources, and financial management[3]. Sound management practices are essential for high-performance[4]. Management skills are crucial for job performance and are often conflated with leadership skills. While leadership is a significant element of management, it involves explicitly the art or skill of getting work done through and with others[5,6]. Developing management abilities is the first step toward establishing leadership qualities, as the skill set of a leader includes many management-related skills[7]. These skills are learnable and practicable, with evidence showing that relevant training can help dietitians improve their management skills[8,9].

Dietitians are always keen to improve their clinical skills, often considering management skills as a lower priority for their future roles in public health or clinical nutrition. However, their roles still require the completion of management tasks . They typically reported feeling more comfortable with the designation of dietitian than that of manager[10]. However, many dietetics professionals eventually encounter opportunities to assume managerial positions. As a study by Doley et al. in 2019 reported, clinical dietitians may have additional operational responsibilities beyond clinical nutrition[1]. Usually, they will involve managing personnel or financial resources, a problem solver, and a leader across the dietetics practice[11]. Surprisingly, it is reported to be challenging and contributes to stressful circumstances[12]. Patten and Sauer even proposed an idea to provide a clear direction for clinical dietitians to enhance their leadership skills[13]. This was aimed at developing and enhancing the variety of skills and knowledge essential to the leadership role.

The doubled roles in the dietetic sector may require dietitians to acquire additional skills in managing foodservice operations, such as managerial, communication, and management skills, which shall be referred to as management skills related to technical, human, and conceptual[12,14]. According to Cluskey et al., the learnable and practicable information and skills can be improved by attending related training, which can help dietitians improve their management skills[15–17]. Training can be designed in various ways, and design is important in maximizing training effectiveness because it determines how training content can be delivered to participants efficiently. According to Stefaniak and Xu, most studies used the ADDIE model as an instructional design for reference as a systematic process that facilitates learning, followed by 4C/ID and ASSURE[15,16].

Recognizing this gap and the need for structured, dietitian-specific training, the Skills Enhancement for the Excellent Dietitians (S.E.E.D) module was developed as a targeted initiative to support dietitians in acquiring essential management skills. The development of the module was guided by the ADDIE instructional design framework, which comprises five phases: Analysis, Design, Development, Implementation, and Evaluation. Given that the S.E.E.D module was only recently introduced, a formal evaluation is necessary to determine whether its content, structure, and delivery align with the professional development needs of its participants. Therefore, this study aims to evaluate the module from the perspective of participating dietitians, focusing on their perceptions and satisfaction as indicators of its quality, relevance, and potential for broader implementation.

METHODS

Study Design

This study employed a cross-sectional design using a survey questionnaire to evaluate participants' perceptions and satisfaction with the S.E.E.D training module. The study involved a cross-sectional study involving a survey questionnaire. The ethics approval was obtained from the Medical Research and Ethics Committee (MREC) (NMRR-19-2476-48152 (IIR)) on 3rd December 2019.

Selection of Respondents

A total of 15 dietitians at Grades U41 and U44, possessing at least two years of work experience, were invited to participate in the training. These dietitians were selected based on the Public Services Commission of Malaysia's requirement since 2005 that they engage in management activities, including supervision, training, and collaboration with other individuals[18]. The list of eligible participants was obtained from the Head of Department, and simple random sampling was employed due to the homogeneity of the group. The sample size of 15 was calculated using the formula proposed by Singh (2012) for continuous variables, considering a 95% confidence level, estimated standard deviation, and margin of error[19]. The chosen sampling design aimed to enhance the study's internal and external validity by involving participants who reflect real-world workplace conditions and are directly responsible for implementing and evaluating management-related interventions[20].

Instruments

The evaluation form was obtained from the Centre for Instructor and Advanced Skill Training (CIAST), an organization under the Department of Skills Development, Ministry of Human Resources, that provides employment skills training [21].The self-administered questionnaire was distributed online via Google Forms after the participants attended the training, focusing on key aspects such as content, delivery, methodology, and facilitation, which serve as indicators of the module's overall quality and relevance.

Procedure

Analysis, Design, Development, and Implementation

The ADDIE model, an acronym for Analysis, Design, Development, Implementation, and Evaluation,

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was employed to develop the S.E.E.D training module. This linear approach allows for customizing instructional design processes according to specific online learning contexts, offering greater flexibility than other models. It is easily modifiable, enabling researchers to adapt content and concepts better to suit users' needs [22,23]. The ADDIE model is widely recognized and referenced in many disciplines, including corporate training programs, making it an appropriate choice for this study[16]. The decision to use the ADDIE model in this study was based on its systematic and structured approach, which aids in developing efficient learning modules and simplifies the process [23]. Additionally, the model's versatility allows it to be applied in various learning environments, both online and offline.

The development of the S.E.E.D training module followed the ADDIE model phases. The analysis phase involved a needs assessment and a literature review conducted to identify essential management skills for dietitians. This analysis determined the inclusion of management skills related to personal qualities, teamwork, and organizational management [24]. A structured plan was developed outlining the objectives, content, and delivery methods for the training module. The design ensured flexibility to accommodate various learning styles and contexts. The training materials and activities were developed based on the design plan. Interactive elements and practical exercises were incorporated to enhance engagement. The S.E.E.D training module incorporates seven essential management skills topics identified during the needs analysis phase [25]. These topics include (i) time management, (ii) stress management, (iii) confident communication, (iv) dealing with difficult behavior, (v) motivation, (vi) teamwork, and (vii) creative thinking. All topics were delivered online in six sessions conducted through the Zoom application. Each session lasted 1 hour and 30 minutes, with a 5-minute break. The training was scheduled on Wednesdays and Fridays to facilitate participant availability and organization. Participants were expected to attend at least 70% of all training sessions, equating to a minimum of four sessions. Attendance at all sessions was mandatory, but if participants had unavoidable conflicts, such as patient consultations or emergency leave, they were provided with session notes to ensure access to the material covered. In such cases, participants were required to inform the researcher in advance to prevent disruptions. Participants who attended fewer than 70% of the sessions were excluded from the study. Certificates of participation were awarded to all attendees to encourage participation and show appreciation.

Evaluation

All the training module sessions have been evaluated to help researchers identify whether the training has achieved the intended outcomes. Participants were asked to complete the evaluation form online at the end of each session. The evaluation consisted of five sections, each representing a different aspect of the session: (i) training content, (ii) training implementation, (iii) technical/methodology, (iv) benefits, and (v) facilitator. However, not all sessions are included in the questions in the training techniques/methodology section.

RESULTS AND DISCUSSIONS

The S.E.E.D training module comprises six comprehensive sessions designed to enhance essential skills for professional development (Figure 1). In the first session, participants will grasp the significance of time management and acquire various techniques to optimize their productivity, alongside exploring the causes and effective management of stress. The second session focuses on building communication confidence, where participants will understand key concepts, identify common barriers, and develop listening skills, as well as learn effective instruction-giving techniques. The third session addresses dealing with difficult behavior, equipping participants with the ability to define challenging behaviors, demonstrate appropriate techniques for managing difficult situations, and provide constructive feedback. In the fourth session, the program delves into motivation, encouraging participants to explore strategies for boosting motivation and its role in enhancing job performance, and he relationship between perception and motivation. The fifth session emphasizes teamwork, helping participants understand their roles within teams and explore collaborative task completion opportunities. Lastly, the program concludes with a session on creative thinking, where participants will define creativity, utilize various tools for idea generation and problem-solving, and recognize the benefits of fostering creativity in the workplace.

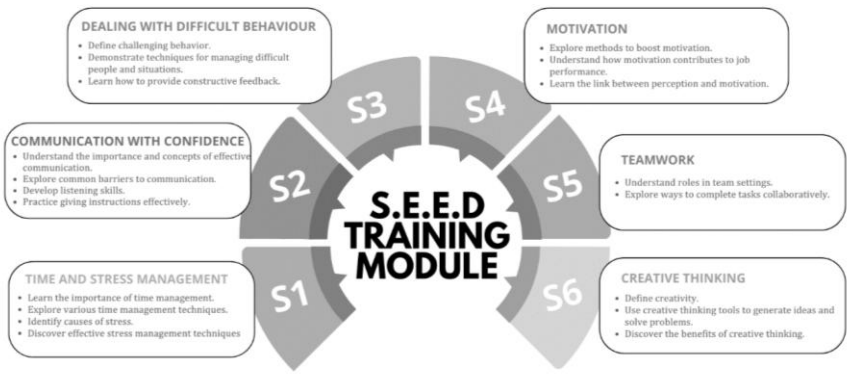

Figure 1. The S.E.E.D training module outline

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Table 1 summarizes participants' feedback after attending six sessions of the S.E.E.D training module with 15 participants (n = 15). The sessions (S1 to S6) cover various topics like Time and Stress Management (S1), Communication with Confidence (S2), Dealing with Difficult Behavior (S3), Motivation (S4), Teamwork (S5), and Creative Thinking (S6). The table shows average scores (mean ± standard deviation) for different aspects of the training sessions on a scale of 0 to 5, where 5 represents the highest mark. The scores for content quality in each session were consistently high, ranging from 4.9 to 5.0, as the training effectively aligned with the participants' practical needs and real-world challenges. During the analysis phase, the researcher interviewed the head of the department, who had over ten years of experience in the dietetic profession. This interview provided valuable insights into the gaps between expected and actual employee skills[26,27], directly shaping the training content. By uncovering key attitudes, recurring challenges, and possible solutions within the dietetics department, the researcher identified critical areas for skill development. While traditional management skills, such as leadership and decision-making, are often associated with top management roles, this module focuses on equipping new and intermediate-level dietitians with essential professional skills.

The findings emphasized the need for training in time management, stress management, confident communication, dealing with difficult behavior, motivation, teamwork, and creative thinking—areas crucial for enhancing their effectiveness in daily practice. By addressing these needs, the module was designed to provide practical skills that support career growth and organizational success, ultimately reflected in high content quality ratings. Scores for the quality of content in each session are consistently high, ranging from 4.9 to 5.0. The highest score is for S5 (Teamwork), with a perfect score of 5.0, indicating the content was highly appreciated across all sessions. Participants rated various aspects highly, with all being marked as "Satisfied" or "Very Satisfied." Specifically, the training objectives were fully achieved, and the content effectively met the participants' professional needs, which had been identified during the analysis phase of the ADDIE model through input from heads of dietetics departments. The course material was easy to understand, supported by relevant examples that enhanced comprehension. The effective use of teaching aids such as infographics and visuals further contributed to the clear communication of complex management concepts. Importantly, the S.E.E.D module did not rely solely on traditional lectures. It incorporated real-life case studies, group activities, role-play, and question-and-answer sessions to actively engage participants. This multimodal approach aligned with visual, auditory, and kinaesthetic learning styles, which has been shown to improve retention and learning outcomes[28,29]. The combination of relaxed, interactive delivery and varied instructional strategies created a conducive learning environment that supported adult learning principles[30].

Table 1. The feedback from participants after attending the S.E.E.D training module,n=15 (mean±sd)

Sections	S1	S2	S3	S4	S5	S6
Content	4.9 (± 0.35)	4.9 (± 0.29)	4.9 (± 0.11)	4.9 (± 0.30)	5.0 (± 0.00)	4.9 (± 0.26)
Implementation	4.7 (± 0.80)	4.7 (± 0.80)	4.9 (± 0.27)	4.5 (± 0.33)	4.7 (± 0.33)	4.6 (± 0.50)
Benefits	4.9 (± 0.35)	4.9 (± 0.35)	4.9 (± 0.26)	4.9 (± 0.26)	5.0 (± 0.00)	4.9 (± 0.30)
Facilitator	5.0 (± 0.00)	5.0 (± 0.00)	5.0 (± 0.00)	5.0 (± 0.00)	5.0 (± 0.00)	5.0 (± 0.00)

S = Session, S1 = Time and stress management, S2 = Communication with confidence, S3 = Dealing with difficult behavior, S4 = Motivation, S5 = Teamwork, S6 = Creative thinking

The feedback on implementing the S.E.E.D training module sessions showed slightly more variation, with scores ranging from 4.5 to 4.9, yet all aspects were rated as "Satisfied" or "Very Satisfied." The lowest score is for S4 (Motivation), at 4.5. However, overall implementation ratings are still very positive. Participants indicated that the program planning and implementation were carried out smoothly, reflecting the well-organized structure of the sessions. Additionally, the time allocated for each module was deemed appropriate, ensuring that participants could engage fully with the content. The training schedule was well-received, with participants appreciating the balance between session frequency and duration, facilitating effective learning and participation. It was agreed that virtual learning is not a new educational tool, and the shift to virtual learning during COVID-19 is a welcome development[31]. This training module was also implemented during a new coronavirus outbreak known as COVID-19. Virtual learning offers complete flexibility compared to the traditional style. The most significant benefit was the reduced costs involved in attending the training since there was no cost required for traveling and accommodation due to it being conducted virtually[31]. The other benefits include increased flexibility, where participants could attend from anywhere, be it the office or home, saving time and reducing family disruptions[31,32]. However, there were some challenges of online learning that prevented the training from being implemented effectively. Network problems, low internet speed, and a lack of high-quality learning devices are some of the technical problems that occur during online learning[32]. However, no technical problem was reported during the training module implementation.

Similar to the content section, the benefits of each session received excellent feedback, with scores of 4.9 to 5.0. Participants reported increased knowledge and understanding compared to before the training, indicating the module's effectiveness in enhancing their management skills. Additionally, they expressed greater confidence in applying what they learned to their professional roles, suggesting that the training prepared them for practical application. Overall, participants found the training highly beneficial, affirming that the S.E.E.D

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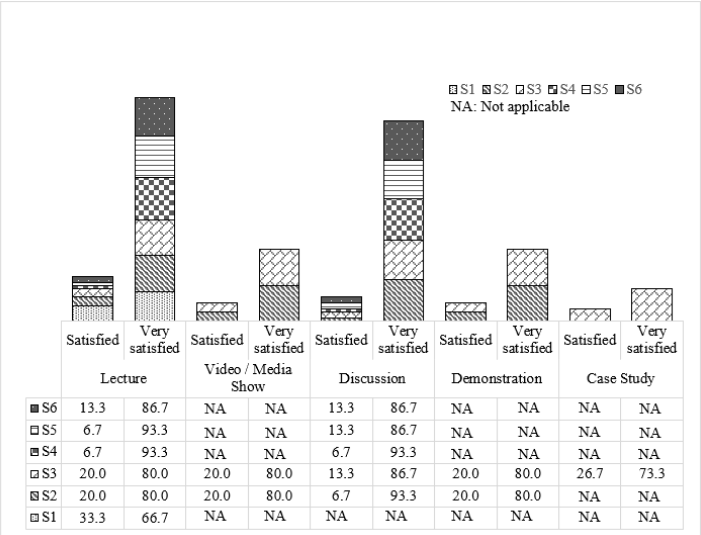
training module effectively met its goals and provided valuable professional development. Again, S5 (Teamwork) received a perfect score of 5.0. The facilitator's performance is consistently rated with a perfect score of 5.0 across all sessions, indicating intense satisfaction with the facilitation. This finding also influenced the study outcome, where if the training participants believed that the trainer provided a variety of training methods and taught them how to apply the contents to the job, the opportunities for training transfer would be enormous[33]. Understanding management knowledge may improve job satisfaction, job performance, and the function of healthcare organizations by achieving more efficient operational working[34,35].

Figure 2 illustrates various training techniques and methodologies used in the S.E.E.D training module, covering six sessions (S1 to S6). Each technique is assessed based on participant satisfaction levels, ranging from "Very Dissatisfied" to "Very Satisfied". Participants rated the lecture technique highly across all sessions, with a majority expressing that they were "Very Satisfied". Satisfaction ratings were consistent, with slightly lower satisfaction in sessions S1 (33.3%), S2, and S3, with 20.0%, respectively, compared to other sessions. The video/media show technique, which was only applied in S2 and S3, received high satisfaction ratings, where 80% of participants reported being "Very Satisfied" in both sessions. The methodology of video demonstrations is believed to contribute to the continuous improvement of knowledge of communication[36]. In this S.E.E.D training module, the participants were provided with video communication demonstrations. The videos, which were acted out by health professionals and shot in a hospital setting, showed ways of communication. The researcher had purposely selected the videos because the background was similar to the participants' current situation. Through this demonstration video, the participants were provided with videos showing less effective ways of communication and also the accurate techniques that are supposed to be done by health professionals. This process is called observational learning, which is also one aspect of the Social Cognitive Theory (SCT)[37]. Through this process, the participants observe the behaviour of others, which will then be remembered and imitated.

The discussion technique received mixed ratings, with more variability in satisfaction. S3, S5, and S6 had slightly lower satisfaction than other sessions, with 86.7%, yet many participants were "Very Satisfied". Similar trends were found for demonstration techniques, where the techniques were only offered for S2 and S3, and most participants rated as "Very Satisfied". Case study techniques, which were only applied in session 3, received the lowest ratings. To some extent, this group activity provides participants with an opportunity to apply theories related to communication and teamwork that the facilitator has taught, and it may also contribute to significant findings on time and interaction effects for teamwork scores. It aligns with the participants' feedback, where most were very satisfied with the demonstration videos and case studies provided in the S.E.E.D training module. The core of the training, such as type, content, methods, and resources, is just as important as need assessment because when employees can implement learning into practical daily operations, the organization can rise to the top[30]. 26.7% of participants reported being "Satisfied" with this method, and a significant majority, 73.3%, rated it as "Very Satisfied". This indicates that, despite a lower overall rating, most participants found the case study technique to be highly effective when it was used.

Future research should assess the long-term impact of the S.E.E.D training module on participants' performance in real-world settings. As the present study has limitations on sample size given that the module was executed during COVID-19, a larger sample size and diverse populations may benefit the research, as they can increase the generalizability of the findings. Moreover, future studies should involve a more extensive and more diverse sample. This could include participants from different regions, healthcare systems, and varying levels of experience, allowing researchers to understand better how different factors influence the effectiveness of the training module.



	Lecture		Video / Media Show		Discussion		Demonstration		Case Study	
	Satisfied	Very satisfied	Satisfied	Very satisfied	Satisfied	Very satisfied	Satisfied	Very satisfied	Satisfied	Very satisfied
S6	13.3	86.7	NA	NA	13.3	86.7	NA	NA	NA	NA
S5	6.7	93.3	NA	NA	13.3	86.7	NA	NA	NA	NA
S4	6.7	93.3	NA	NA	6.7	93.3	NA	NA	NA	NA
S3	20.0	80.0	20.0	80.0	13.3	86.7	20.0	80.0	26.7	73.3
S2	20.0	80.0	20.0	80.0	6.7	93.3	20.0	80.0	NA	NA
S1	33.3	66.7	NA	NA	NA	NA	NA	NA	NA	NA

Figure 2. Evaluation of training techniques in the S.E.E.D training module across six sessions (S1 to S6)

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CONCLUSIONS

The S.E.E.D training module integrates Social Cognitive Theory (SCT) and the ADDIE framework to systematically enhance essential management skills in dietitians. Overall, the findings suggest that the S.E.E.D training module effectively achieved its objectives, offering six comprehensive sessions focused on the key management skills that can help dietitians improve their efficiency in clinical, community, and food service settings. The module received consistently high content quality ratings (4.9–5.0), aligning with participants' practical needs. Feedback on implementation showed strong ratings (4.5–4.9), all falling within the "Satisfied" to "Very Satisfied" range. These results affirm the module's effectiveness in preparing dietitians for complex healthcare environments, with opportunities for further refinement to enhance engagement and professional development.

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

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AUTHOR CONTRIBUTIONS

R.R.: Conceptualization, methodology, material preparation, data collection, formal analysis, writing original draft, review, editing, and project administration. N.B.M.Y., H.G., N.O., and R.J.: Conceptualization, writing, review, and editing. All authors have read and approved the final manuscript.

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