Nurses’ Performance regarding Care of Patients with Posttraumatic Hypovolemic Shock

Marwa Ali Awad Ali¹, Marwa Mostafa Ragheb² and Rawia Ali Ibrahim³
(1) B. Sc. of Nursing (2016), Faculty of Nursing, Benha University, Egypt, (2) Professor of Medical Surgical Nursing, Faculty of Nursing, Benha University, Egypt and (3) Assistant professor of Medical Surgical Nursing, Faculty of Nursing, Benha University, Egypt.

Abstract

Background: Hypovolemic shock is a severe life threatening emergency affecting all organ system. Nurses play a vital role in caring of patient with post traumatic hypovolemic shocked patient. Aim: Was to assess nurses’ performance (knowledge and practice) regarding care of patients with posttraumatic hypovolemic shock. Design: Descriptive research design was utilized. Setting: This study was conducted in Emergency and Intensive Care Unit, at Benha University Hospital. Sample: A convenience sample of 120 nurses from both sex were involved in the current study. Tools: Data was collected using two tools, I: Nurses knowledge questionnaire and II: Observational checklist for nurses practice. Results: 43.0% of the studied nurses were in age group 30-<40 years with the age 34.10 ± 7.69. Also, 80.0% of them were females and 76.6% of them were married. The educational qualification in 43.3% of them had nursing school diploma and 30.0% of them had 1-<5 years of experience at emergency department and ICU, 56.7% of the studied nurses had satisfactory level of knowledge regarding care for post traumatic hypovolemic shocked patients. While, 43.3% of them had unsatisfactory level of knowledge. 73.3% of the studied nurses had competent level of practice regarding care for post traumatic hypovolemic shocked patients. Conclusion: There was a significant statistical positive correlation between total level practice of the studied nurses and their total level of practice at P-value 0.042. Recommendations: Training program should be conducted about nursing management for hypovolemic shocked patient for nurses who are working at emergency department &Intensive care unit.

Key words: Knowledge, Practice, Post traumatic hypovolemic shock.

Introduction

Shock is a life-threatening condition of circulatory failure, causing inadequate oxygen delivery to meet cellular metabolic needs and oxygen consumption requirements, producing cellular and tissue hypoxia. The effects of shock are initially reversible, but rapidly become irreversible, resulting in multiorgan failure (MOF) and death. When a patient presents with undifferentiated shock, it is important that the clinician immediately initiate therapy while rapidly identifying the etiology so that definitive therapy can be administered to reverse shock and prevent MOF and death (Ali et al., 2022).

Manifestations of hypovolemic shock vary with the severity of the fluid or blood loss. However, all symptoms of shock are life-threatening and need emergency medical treatment. Mild symptoms can include headache, fatigue, nausea, profuse sweating and dizziness whenever severe symptoms, which must be taken seriously and warrant emergency medical attention, include cold or clammy skin, pale skin, rapid, shallow breathing, rapid heart rate, little or no urine output, confusion, weakness, weak pulse and loss of consciousness (Swaffield & Olympia, 2022).

The principle of managing patient with hypovolemic shock focus on stop any visible
bleeding. The nurse play important role in give first aid of posttraumatic hypovolemic shocked patient, by insure patent airway, insert intravenous catheter, administer oxygen as doctor order, the exact fluid deficit cannot be determined. Therefore, it is prudent to start with 2 liters of isotonic crystalloid solution infused rapidly as an attempt to quickly restore tissue perfusion. Fluid repletion can be monitored by measuring blood pressure, urine output, mental status, and peripheral edema. Multiple modalities exist for measuring fluid responsiveness such as ultrasound, central venous pressure monitoring, and pulse pressure fluctuation as described above. In general, for hypovolemic shock, vasopressors should not be used because they can worsen tissue perfusion (Cohen et al., 2022).

Significance of the study

Trauma is an epidemic problem and is one of the top ten leading causes of death world widely, hypovolemic shock can affect human circulatory system and can cause multi organ failure which a common cause of death globally. Outcome from sever hemorrhage remains poor, with high mortality rates, 50% for patients need blood transfusion. More than 6 million deaths occur due to trauma out of which 20% are due to uncontrolled bleeding and diminish tissue perfusion which keeps the metabolic needs of the tissues and cells from being met (Gitz et al., 2019).

The exact cause of hypovolemic shock is not known because it is a response rather than disease it is common complication among hospitalized patient in emergency department and after surgery or invasive procedure (Semerci et al., 2018). Every years around 5.8 million people die worldwide due to events related trauma leading to death and disability about 40 percent of trauma related death are due to hemorrhage (Jacob & Kumar, 2018).

Nurses who are working in intensive care unit and emergency department play an important role in management of post traumatic hypovolemic shocked patient which help in decreasing mortality rate and prevent complication. They may have lack in knowledge and improper practice regarding post traumatic hypovolemic shocked patient (Jeon & Park, 2021). Therefore, the study may explore the nurses’ knowledge and practices about post traumatic hypovolemic shocked patient.

Aim of the study:
The aim of the present study was to assess nurses’ performance regarding care of patients with posttraumatic hypovolemic shock.

Research questions:
1-What is the level of nurses’ knowledge regarding care of post traumatic hypovolemic shocked patients?
2-What is the level of nurses’ practice regarding care of post traumatic hypovolemic shocked patients?
3-Is there a relation between nurses’ knowledge and practice regarding care of post traumatic hypovolemic shocked patients?

Research design:
A descriptive research design was utilized to conduct this study.

Setting:
The study was conducted in the emergency intensive care unit and general intensive care unit at Banha University Hospital.

Sample:
Convenience sample of 120 nurses who are working in emergency Intensive care unit and general intensive care unit were included in this study from both sex and willing to participate in the study.

Tools for data collection:
Two tools for date collection were used as follow

Tool I: Nurses Structure questionnaire: It was designed by the researcher after reviewing
of related and recent literature. It was adapted from (Coelho, 2021, Phungoen, et al., 2020, Goma et al. 2018 and Zou, et al., 2017). And it aimed to assess nurses’ knowledge regarding post traumatic hypovolemic shocked patient. It consisted of two parts:

- **The first part:** concerning the socio-demographic characteristics of nurses related to their age, gender, marital status, educational level, years of experience, and training courses about hypovolemic shock.

- **The second part:** concerned with nurses’ knowledge aimed to assess patients with post traumatic hypovolemic shock, it consist of two parts as follow:

1. **Nurses knowledge regarding hypovolemic shock.** It was consisted of 13 MCQ as (Definition of hypovolemic shock, amount of fluid loss in hypovolemic, stages, causes, symptoms, diagnosis, complication, treatment).

2. **Knowledge regarding nursing care for hypovolemic shocked patient** and consisted of 17 MCQ question as (urgent intervention of hypovolemic shock, proper position of patient, fluid replacement, fluid balance chart and blood transfusion).

**Nurses’ knowledge scoring system:**
Knowledge obtained from nurses was scored and calculated, whereas correct answer were given one score and incorrect answer were given zero score.

**The total scoring system of nurses’ knowledge was calculate and classified as following:**

- Total knowledge score : 30 equal (100%)
  - ≥ 24) ≥80% considered satisfactory level of nurses’ knowledge.
  - (< 24) <80% considered unsatisfactory level of nurses’ knowledge.

**Tools validity and reliability:**

**Tools validity:**
Validity of tool was reviewed by a panel of five experts from medical surgical nursing department, Jury experts include one professor, two assistant professor and two lecture in Medical Surgical Nursing department (n=5) Faculty of Nursing, Benha University to test the relevance and clarity of content and necessary modification was done.

**Reliability:**
Reliability was testing statistically to assure that the tools are reliable before data collection. Testing reliability of the developed tools was done through Alphacron bach test: ass follow

- Nurses structured question reliability was (0.82).scored is good.
Observation checklist reliability was (0.85). scored is good

**Ethical consideration:**

The current study was conducted after primary approval obtained from the ethics committee in the Faculty of Nursing, Benha University. Verbal approval was obtained from the nurses before inclusion in the study. the researcher clarified the aim of the study to the nurses included in the study and assured maintaining confidentiality of data. Nurses were informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time.

**Pilot study:**

The pilot study conducted on (10%) of nurses (12 nurses) and they excluded from the study sample to assess the tools clarity and applicability. According to the results obtained from the data analysis, items correction, modification, omission and addition was done as needed.

**Field work:**

The process of data collection extend over 6 month from the beginning of January (2022) to the end of June (2022). The researcher visited ICU department and emergency ICU. three days weekly at morning and after noon shifts to collect data by using previous tools. The researcher interviewed the available nurses in ICU and emergency ICU. explained The aim of the study and take their approval to participate in the study before data collection then asses their knowledge and practice by using (tool 1 & tool 11). hypovolemic shock and nursing management for hypovolemic shocked patient , this tool were filled by the nurses ,it had taken about 20-30 minute to be filled .Nurses were observed by the researcher using observational checklist to assess their practices regarding care of patient with hypovolemic shock .It had been taken for 60 minute for each nurse.

**Statistical analysis:**

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS) version 22 scores, Data were presented in the form of tables and figures. Qualitative data was presented in the form of frequency distribution tables, number and percent. It was analyzed by Chi-square test ($X^2$) to detect the relation between the variables of the study

**Statistical significance was considered as follows:**

- P-value > 0.05 Not significant
- P-value < 0.05 Significant
- P-value < 0.001 Highly significant

**Results:**

Table (1) reveals that, 43.0% of the studied nurses were in age group 30-<40 years with the age 34.10 ± 7.69. Also, 80.0% of them were females and 76.6% of them were married. The educational qualification in 43.3% of them had nursing school diploma and 30.0% of them had 1-<5 years of experience at emergency department and ICU. In addition, 60.0% of the studied nurses were working at emergency department and 76.6% of them hadn’t been attended courses related to care for post traumatic hypovolemic shocked patients.

Figure (1) shows that, 56.7% of the studied nurses had satisfactory level of knowledge regarding care for post traumatic hypovolemic shocked patients. While, 43.3% of them had unsatisfactory level of knowledge

Table (2) shows that, 83.3% of the studied nurses had competent practice regarding Cannula insertion and Urinary catheter insertion. Also, 80.0%, 76.6%, 73.3% of them had competent practice regarding oxygen therapy, emergency care, intake and output respectively. In addition, 70.0% of them had competent practice regarding blood transfusion, Pulse oximeter and Trendelenburg position.

Figure (2) illustrate that, 73.3% of the studied nurses had competent level of practice
regarding care for post traumatic hypovolemic shocked patients. While 26.7% of them had incompetent level of practice.

Table (3) reveals that, there was a significant statistical positive correlation between total level practice of the studied nurses and their total level of practice at P-value 0.042.

Table (1): Distribution of demographic characteristics of the studied nurses (n=120).

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>Items</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td>20-&lt;30</td>
<td>36</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>30-&lt;40</td>
<td>52</td>
<td><strong>43.0</strong></td>
</tr>
<tr>
<td></td>
<td>40-&lt;50</td>
<td>24</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>≥50</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>34.10 ± 7.69</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>24</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>96</td>
<td><strong>80.0</strong></td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>92</td>
<td><strong>76.6</strong></td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Widow</td>
<td>8</td>
<td>6.7</td>
</tr>
<tr>
<td>Educational qualification</td>
<td>Nursing school Diploma</td>
<td>52</td>
<td><strong>43.3</strong></td>
</tr>
<tr>
<td></td>
<td>Nursing Institute</td>
<td>44</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>Bachelor of nursing</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Post graduate studies</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td>Experience years at ICU</td>
<td>1-&lt;5</td>
<td>32</td>
<td><strong>26.7</strong></td>
</tr>
<tr>
<td>Emergency ICU</td>
<td>5-&lt;10</td>
<td>36</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>10-15</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>&gt;15</td>
<td>32</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>9.77± 5.75</td>
<td></td>
</tr>
<tr>
<td>Department</td>
<td>ICU</td>
<td>48</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>ER</td>
<td>72</td>
<td><strong>60.0</strong></td>
</tr>
<tr>
<td>Attending courses</td>
<td>Yes</td>
<td>28</td>
<td>23.3</td>
</tr>
<tr>
<td>related to care for post</td>
<td>No</td>
<td>92</td>
<td><strong>76.7</strong></td>
</tr>
<tr>
<td>traumatic hypovolemic</td>
<td>If yes, n=28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shocked patients</td>
<td>&lt;1 month</td>
<td>4</td>
<td>14.3</td>
</tr>
<tr>
<td></td>
<td>1-3 months</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>4-6 months</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>&gt;6 months</td>
<td>24</td>
<td>85.7</td>
</tr>
</tbody>
</table>

ICU : Intensive Care Unit
Nurses’ Performance regarding Care of Patients with Posttraumatic Hypovolemic Shock

Figure (1):- Distribution of the studied nurses according to their total knowledge levels about care for post traumatic hypovolemic shocked patients (n=120).

Table (2): Distribution of the studied nurses according to competency of their practice regarding caring for posttraumatic hypovolemic shocked patient (n=120).

<table>
<thead>
<tr>
<th>Items</th>
<th>Competent</th>
<th>Incompetent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Emergency care</td>
<td>92</td>
<td>76.6</td>
</tr>
<tr>
<td>Cannula insertion</td>
<td>100</td>
<td>83.3</td>
</tr>
<tr>
<td>Fluid therapy</td>
<td>80</td>
<td>66.6</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>84</td>
<td>70.0</td>
</tr>
<tr>
<td>Pulse oximeter</td>
<td>84</td>
<td>70.0</td>
</tr>
<tr>
<td>Intake and output</td>
<td>88</td>
<td>73.3</td>
</tr>
<tr>
<td>Oxygen therapy</td>
<td>96</td>
<td>80.0</td>
</tr>
<tr>
<td>Urinary catheter insertion</td>
<td>100</td>
<td>83.3</td>
</tr>
<tr>
<td>Trendelenburg position</td>
<td>84</td>
<td>70.0</td>
</tr>
</tbody>
</table>
Figure (2):- Distribution of the studied nurses according to their total level of practice regarding care for post traumatic hypovolemic shocked patients. (n=120).

Table (3): Correlation between level of knowledge and level of practice among the studied nurses.

<table>
<thead>
<tr>
<th>Variables</th>
<th>level of knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R</td>
</tr>
<tr>
<td>Level of Practice</td>
<td>0.678</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.042*</td>
</tr>
</tbody>
</table>

* P-value ≤ 0.05 Significant

Discussion:

Pertaining to nurse's age, the findings of the present study revealed that more than two fifths of the studied nurses were in age group 30-<40 with mean age 34.10 ± 7.69 years. The researcher believes that, this result might explain that emergency and critical departments need the young age nurses who can be fast in the emergency situation and tolerate the nature of work in emergency and ICU.

This result was in agreement with Jama and Torgbenu, (2019), whose study was about "Assessment on management of hypovolemic shock in Galkayo public hospital, Somalia" who found that more two fifths of nurses were in age group 30-40 years.

Also, this result was in the same line with Abdelmoty, etal., (2021), in a study entitled "Nurses’ performance regarding care of patients with hypovolemic shock: suggested guideline" who found that mean age of nurses were 35 ± 8.3.

On the other hand, this result disagreed with Jaafar and Abed,( 2020), in a study entitled "Nurses’ knowledge toward traumatic head injury during golden hour" who found that about two thirds of nurses were in age group 20-24 years with mean age 25.1±6.77.

Regarding nurse's gender, the findings of the present study revealed that majority of the studied nurses were females. From researcher point of view, this result could be attributed to that female nurses in Egypt are predominant in nursing profession and male nurses are new comers to the nursing profession as the nursing schools were recruiting of females more than males.

This result was in agreement with Khamis and Abed,( 2018), who studied about "Effectiveness of an education program on
nurses’ practice concerning hypovolemic shock at emergency units in Diyala teaching hospitals” and found that more than two thirds of nurses were females.

This result was supported with Jeon and Park,( 2021), who reported in their study in a study about "An exploratory study to develop a virtual reality based simulation training program for hypovolemic shock nursing care: a qualitative study using focus group interview” that all participants were female nurses.

On the other hand, this result was in disagreement with Elsayed et al., (2020), whose a study entitled "Nurses' performance regarding advanced care of trauma patients at emergency department and reported that slightly more than three quarters were males. The researcher believes that this discrepancy in findings could be attributed to the trends in the decline of gender inequality in most countries.

Concerning nurse's marital status, the findings of the present study revealed that more than three quarters of the studied nurses were married. From the researcher point of view, this finding could be attributed to that the participant's age was within the marriage age according to the Egyptian culture.

This result was in agreement with Mohamed, et al ., (2020), whose study about "Assessment of nurses’ knowledge and practices regarding care for patients with cardiogenic shock” and found that near to three quarters of nurses were married.

Also, This result was supported with Nshutiykuri, et al. , (2020), in a study entitled "An assessment of Nurses' knowledge, attitude and practice of emergency care related to road traffic accident victims at three selected hospitals in Rwanda” who reported that more than two thirds of nurses were married.

Concerning nurse's educational qualification, the findings of the present study revealed that more than two fifths of the studied nurses had nursing school diploma, this could be explained in light of the known fact that nursing job in Egypt was exclusive on female only till few years ago and number of nurses graduate from diploma was higher than bachelor .

This result goes in the same line with Abdelmoty, et al., (2021), who found that more than two thirds of nurses had secondary nursing diploma.

On the other hand, this result is in contrast with Ali, et al., 2022, whose a study was about "Effect of an educational program on the nurses' performance and health outcomes for patients with traumatic head injury" and reported that two thirds of nurses had technical institute.

Regarding to nurse's years of experiences, the findings of the present study revealed that near to one third of the studied nurses had 5<10 years of experience with mean years 9.77± 5.75.

The researcher believes that, this result could be explained in light of the nature of the ER and ICU unit that is as an area of specialty necessitates an experienced nurse for better quality of nursing care offered and ability to tolerate the working load as patients require complex assessment, high intensity interventions and continuous nursing vigilance.

This result was in agreement with Hussein and Hassan, (2020), who studied "Effectiveness of educational program on nurse's knowledge concerning management of cardiogenic shock at AL-Mosul teaching hospitals" and stated that more than three fifths of nurses had experience less than 5 years.

But, This result disagreed with Jeon and Park,( 2021), who found that more than two thirds of nurses had more than 10 years of experience.

In relation to total level of Nurses knowledge, the findings of the present study
revealed that more than half of the studied nurses had satisfactory level of knowledge. This result was consistent with Abo El Ata, et al., (2020), in a study entitled ”Nurses’ knowledge and practice regarding patients with post traumatic hypovolemic shock” who found that more than half of nurses had satisfactory level of knowledge.

On the other hand, this result is contradicted with El-Gawad, et al., (2019), in a study entitled "Effect of education program on nurses performance regarding traumatized patient care during the golden hour in emergency room at Zagazig university hospital" who found that more than half of nurses near to three quarters of nurses had unsatisfactory level of knowledge pre-program.

**In relation to total level of practice**, the findings of the present study revealed that near to three quarters of the studied nurses had competent practice level regarding posttraumatic hypovolemic shock.

The researcher believes that, this result also could be attributed to that more than three thirds of participants had more than 5 years of experience in their units either ICU or ER that may have positive affect on improving their practice.

This result was in agreement with Abo El Ata, et al., (2020), in a study entitled who found that more three fifths of nurses had satisfactory level of practice.

On the other hand, this result is in disagreement with Khamis and Abed, (2018), who found that more than three quarters of nurses had poor level of practice pre-program implementation.

The researcher believe that, this variation in findings could be attributed to many factors such as low nurse to patient ratio, less experience in ER/ICU, diminished institutional resources and absence of specific protocol.

**Conclusion:**

More than half of studied nurses had satisfactory level of total knowledge and nearly three fourth had satisfactory of total practice. there was a significant statistical positive correlation between total level practice of the studied nurses and their total level of practice at P-value 0.042

**Recommendations:**

- Developing system for periodic nurses assessment to determine strategies of upgrading their knowledge and enhance their practice.
- training program should be conducted about nursing management for hypovolemic shocked patient for nurses who are working at emergency department &Intensive care unite.
- Future research about nursing care for post traumatic hypovolemic shocked patient are needed to the further research study

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You, B., Yang, Z., Zhang, Y., Chen, Y., Gong, Y., Chen, Y., & Yuan, Z. (2022). Late-Onset Acute Kidney Injury is a Poor
إعداد الممرضات تجاه مرضى صدمة نقص حجم السوائل بعد الحوادث
مروة علي عواد علي - مروه مصطفى راغب - نهال حامد – راويه علي إبراهيم

صدمة نقص حجم السوائل بالجسم هي صدمة هي حالة مهددة للحياة من فشل في الدورة الدموية تلعب أعمال
الممرضة في وحدة العناية المركزة وقسم الطوارئ دورًا مهمًا في إدارة المريض المصاب بصدمة نقص حجم
الدم بعد الصدمة مما يساعد في تقليل معدل الوفيات ومنع المضاعفات. قد يكون لديهم نقص في المعرفة والممارسة
غير السليمة فيما يتعلق بمريض صدمة نقص حجم الدم بعد الصدمة. لذلك هدفت الدراسة إلى تقييم إداء الممرضات
تجاه مرضى صدمة نقص حجم السوائل بالجسم بعد الحوادث. وقد أجريت هذه الدراسة في قسم عناية الطوارئ
والعناية المركزة لمستشفى جامعة بنها وقد اشتملت العينة على 120 ممرض وتم تقسيمهم إلى مجموعتين عن
المعرفة والممارسات للممرضين. وأوضحت النتائج نصف الممرضات الخاضعات للدراسة يتمتعن بمستوى
لائق من المعرفة وأن ما يقرب من ثلاثة أرباعهن يتمتعن بمستوى كفاء من الممارسات فيما يتعلق برعاية
مريض صدمة نقص حجم الدم بعد الإصابة كما وجدت علاقة ارتباط موجبة ذات دلالة إحصائية بين مستوى
المعرفة الكلي للممرضين الخاضعين للدراسة ومستوى ممارستهم. في ضوء نتائج هذه الدراسة يوصى بالنتائج
التالية يجب إجراء برامج تدريبية للممرضين حول الرعاية التمريضية للمرضى المصابين بصدمة نقص حجم
السوائل لقسم الطوارئ ووحدة العناية المركزة وتطوير نظام التقييم الدوري للممرضين لتحديث استراتيجيات و
رفع درجات معرفتهم وتعزيز ممارساتهم.