

Assessment on Management of Hypovolemic Shock in Galkayo Public Hospital, Somalia

¹Abdinasir Abdullahi Jama and ²Eric Lawer Torgbenu

¹Department of General Nurse, Faculty of Health Science,
Galkayo University, Somalia

²Department of physiotherapy and Rehabilitation Sciences,
University of Health and Allied Sciences, Ho, Ghana

Abstract: Hypovolemic shock is a life-threatening condition mainly prevalent among individuals of the high heat zones. It contributes to over 30% infant deaths globally. The aim of the study was to assess healthcare management of hypovolemic shock in Galkayo Public Hospital in Somalia. The study was a descriptive cross sectional study. Purposive sampling technique was used to recruit 50 qualified participants. Well-structured questionnaires were filled by participants who gave their consent. Data were analysed using the statistical package for social sciences version 20.0. Descriptive data were generated and statistical inferences were tested using the chi-square method with the level of significance set at 5%. Result showed that males (60%) participants were more than females (40%). The ages of the participants ranged between 28 and 58years. Most healthcare workers (40%) used UNICEF and MSF guidelines for the management of hypovolemic shock and participants (56%) were also more likely to treat the condition with intravenous fluid or blood. Conclusion: Healthcare workers require frequent continuing professional development to keep up to date with the management of hypovolemic shock in Galkayo Public Hospital.

Key words: Hypovolemic Shock • Management • Healthcare Workers • Hospital • Somalia

INTRODUCTION

In generally the hypovolemic shock is a common illness that exists in the entire world and affects both children and adults [1]. Hypovolemic shock is a serious life condition that can come when a person losses more than 20 percent (one-fifth) of his body's blood or fluid supply [2]. This severe fluid loss makes it difficult for the heart to pump an adequate amount of blood to the human body so that the early diagnosis and recognition of the symptoms and treatment of shock are paramount to reversing cellular hypoxia and ischemia before impossible to repair end-organ damage ensues [1]. Hypovolemic shock is also defined as medical or surgical condition in which the amount of blood lost causes multiple organ failure due to lack of adequate circulating volume and consequent inadequate perfusion. Mostly, the hypovolemic shock comes after rapid blood loss (hemorrhagic shock) [3]. During the First World War,

Cannon [4] suggested possible solution for hypovolemic shock management and the priority of the activity required and his recommendation was delaying fluid resuscitation until the cause of the hemorrhagic shock was resolved by surgically. Crystalloids and blood were used broadly during World War II for the treatment of patients in unstable conditions [5]. Experience from the Korean and Vietnam were recited that volume resuscitation and early surgical intervention was dominant for surviving traumatic injuries consequential in hemorrhagic shock [5]. Despite, recent investigators have questioned these guidelines today, disagreements exist regarding the optimal treatment of hemorrhagic shock [6].

As other research reported there are also two different types of hypovolemia: absolute hypovolemia and relative hypovolemia. Lichtenberger [7] reported that absolute hypovolemia is a direct loss of whole blood or body fluid, caused by traumatic injuries such as multiple

gunshot wounds, stab injuries to an artery or the abdomen and/or gastrointestinal bleed, While, relative hypovolemia is a result of fluid moves within the body. In the situation of relative hypovolemia, fluid also has moved out of the intravascular space and initiated the resulting elsewhere [8].

The symptoms of hypovolemic shock are different depending on the stage of the hypovolemic shock or the amount of fluid or blood loss. Most symptoms of shock are very serious and need urgent medical treatment [9]. Internal bleeding symptoms are very difficult to diagnosis until the symptoms of shock appear. Due to the indications of internal bleeding are different according to what part of the body is involved or sometimes what organ system is damaged, symptoms of the bleeding may be occurred at internal and it will be difficult to diagnosis or the patient may have no initial complaints. For example, a patient with the damage of vision eye so the bleeding occurred within the globe; or a patient with a ruptured abdominal aortic aneurysm may be unconscious, in shock without measuring his blood pressure and a weak pulse; sometimes small subdural hematomas are found at CT scan in people getting other reasons and the patients will have no symptoms at all but external bleeding will be visible [10]. Symptoms of hemorrhagic shock do not appear immediately after the bleeding start. Some older adults mostly do not experience these symptoms until the shock progresses significantly. These symptoms include anxiety, dizziness, confusion, low blood pressure, weak pulse, low or no urine output and loss of consciousness. There are also similar symptoms that indicate external bleeding and these are: abdominal pain, Hematochezia, vomiting blood, blood in the urine, abdominal swelling and chest pain. Hypovolemic shock also has some complications which is very critical like organs damage such as the kidney or brain, gangrene of the arms or legs and heart attack, however, the effects of hypovolemic shock depends on the amount blood or fluids lost. The degree of injuries can also determine chances for survival. If the patient has before chronic medical conditions such as diabetes or heart, lung, or kidney disease, these conditions can increase the likelihood that one may experience more complications from hypovolemic shock [11].

Hypovolemic shock can affect human circulatory system and can cause multi organ death, it is also known to be the cause of death globally and especially in Somalia. There are many vulnerable groups living in Somalia and the prevalence of hypovolemic shock is high because of the climate changes and presence of the

insurgency especially around the Galkayo area of Somalia. Though, the condition is a preventable one, it will take the immediate and appropriate management procedures of qualified health personnel to resuscitate a victim. It is worth to mention, that assessing the management of the condition among health persons concerning the condition will go a long way strategizing to prevent mortality resulting from this preventable disease. This study will also fill the knowledge gap relating to the management of these victims in Somalia.

The current study would help to address the complications emanating from hypovolemic shock and may help to strategize the procedures involving the treatment and management of the condition. It is based on this that, the researchers sought to answer the following questions:

- How do the doctors in Galkayo manage hypovolemic shock?
- What are the common guidelines that doctors in Galkayo use to manage hypovolemic shock?

It is believed that assessing the common guidelines and management of hypovolemic shock in Galkayo hospital among medical health workers in Somalia will help policy strategy.

MATERIALS AND METHODS

This study included all departments of Galkayo public hospital. They include the emergency room, stabilization centre, the outpatient department (OPD), operation theatre, special care centre for tuberculosis, the Outpatient therapeutic program (OTP) and pediatric unit.

Study Design: The study used was cross-sectional survey design with a well-structured questionnaire to collect data on guidelines and management of hypovolemic shock from healthcare prescribers in the Galkayo Hospital in Somalia. The Galkayo public hospital has 120 staff with 12 doctors, 16 supervisors and 92 nurses.

Inclusion/Exclusion Criteria: This study focused on only the health workers in Galkayo public hospital. An individual was included if he had ever managed a hypovolemic shock patient. Health personnel who had not managed hypovolemic shock were excluded. Medical staff was also excluded if they had not had a maximum of 5 years of work experience.

Sampling Technique: The study employed purposive sampling to recruit 50 qualified participants who consented.

Data Collection Procedure: The study used a well-structured questionnaire which was drafted from literature. The questionnaire was piloted among medical personnel at the district hospital and the necessary modifications made before the start of the study. The objectives of the study were well explained to participants of Galkayo hospital and those who agreed and gave written consent were made to fill the questionnaire. The first author assisted participants who may have issues during the filling out of the questionnaires. Because Galkayo hospital has three work shifts for medical personnel- morning, afternoon and night, the collection of data was planned during the close of a shift where participants could have enough time to answer appropriately the questionnaire without any interruptions. Data collection spanned between the period of three (3) months from February, 2016 to May, 2016.

Data Analysis and Management: Data collected were verified, coded and summarised before they were analysed using the IBM SPSS version 20.0 computer software. Descriptive statistics of frequencies, percentages, mean and standard deviations were generated. Statistical inferences were tested using the chi-square method with a level of significance set at $p < 0.05$.

Ethical Consideration: Approval for the study was obtained from the Ethical and Scientific Committee for the Galkayo University. Written permission was also obtained from the Hospital Administration of Galkayo Hospital Management. Every respondent was required to fill a written consent before allowed to participate. Confidentiality of the information provided was safeguarded and participants were told they could at any time opt out of the study without necessarily required to give any explanation whatsoever.

RESULTS

Table 1 presents the socio-demographic characteristics of participants working at Galkayo Hospital in Somalia. Fifty (50) participants including 30 (60%) males and 20 (40%) females. 38(76%) nurses and 12(24%) doctors participated in the current study. The ages of participants ranged from 28 to 58 years with the mean age

Table 1: Socio-demographic Characteristics of the study participants

Variable	Frequency	Percentage
Age		
20-30	6	12%
31-40	22	44%
41-50	17	34%
51-60	5	10%
Total	50	100%
Sex		
Male	30	60%
Female	20	40%
Total	50	100%
Marital status		
Single	26	52%
Married	20	40%
Divorced	4	8%
Total	50	100%
Position		
Nurse	38	76%
Doctor	12	24%
Total	50	100%
Years of experience		
5-8years	42	84%
9-14 years	8	16%
Total	50	100%
Mean Age (SD) years	39.88(8.09)	

of 39.88±8.09 years. Majority of participants, 22 (44%) have ages between 31-40 year age group. The least number of participants have ages of 51-60 years. (Revise high light??) Majority of participants have below 9 years of working experience (84%) and the remaining had worked for a period of 9-14 years.

Table 2 presents guidelines of hypovolemic shock and the management as presented by participants. Majority of participants prefer to use UNICEF and MSF guidelines (40%), 34% use WHO guidelines and the remaining 26% prefer to use the IMCI guidelines.

Considering the management of HVS, 28(56%) would give intravenous fluid or blood to their patients whilst the remaining 22(44%) prefer to give ORS or RESOMAL medication through the N.G tube for their patients presenting HVS.

Table 3 presents the associated factors influencing the selection of hypovolemic shock guideline used in the Galkayo Hospital. Majority of participants (20) use the UNICEF and MSF HVS guidelines more than other two guidelines. It could be realised that, 12 participants within the age group of 31-40 years mostly used this is very guideline. The IMCI guideline was the less used among participants (13). Nurses (10) and doctors (10) both prefer to use UNICEF and MSF HVS guideline alike. Assessing the factors which influence the choice of the guidelines, it was realised that the occupation of the participants that is, being a nurse or doctor and the marital status of participants were statistically significant at $P < 0.05$.

Table 2: Guidelines of hypovolemic shock and management

Variable	Frequency	Percentages(%)
Guidelines of HVS		
1. I use IMCI	13	26
2. I use UNICEF & MSF	20	40
3. I use WHO	17	34
Total	50	100
HVS Management		
1. Give I.V fluid/blood	28	56
2. Put N.G tube then give ORS or RESOMAL	22	44
Total	50	100

IMCI, MSF, MSF, ORS???

Table 3: Factors influencing the choice of hypovolemic shock guidelines

		Which guidelines do you use to manage hypovolemic shock?				
		I use UNICEF AND MSF	I use IMCI	I use WHO	Total	P-value
Age	20-30	2	2	2	6	0.166
	31-40	12	3	7	22	
	41-50	4	8	5	17	
	51-60	2	0	3	5	
	Total	20	13	17	50	
Position	Nurse	10	12	16	38	0.002**
	Doctor	10	1	1	12	
	Total	20	13	17	50	
Sex	Male	13	9	8	30	0.395
	Female	7	4	9	20	
	Total	20	13	17	50	
Year of Experience	5-8	16	11	15	42	0.791
	9-14	4	2	2	8	
	Total	20	13	17	50	
Marital status	Married	7	12	1	20	0.0001**
	Divorce	2	0	2	4	
	Single	11	1	14	26	
	Total	20	13	17	50	

Table 4: Factors influencing the methods of HVS management

		How do you manage hypovolemic shock?			
		Give i.v. fluid or blood	Put N.G tube then give ORS. or, RESOMAL	Total	p-value
Work experience in year	5-8	22	20	42	0.238
	9-14	6	2	8	
	Total	28	22	50	
Marital status	Married	10	10	20	0.027**
	Divorce	1	3	4	
	Single	18	8	26	
	Total	29	21	50	
Positions	Nurse	18	20	38	0.0291**
	Doctor	10	2	12	
	Total	28	22	50	
Sex	Male	18	12	30	0.0485**
	Female	10	10	20	
	Total	28	22	50	
Age	20-30	3	3	6	0.221
	31-40	11	11	22	
	41-50	9	8	17	
	51-60	4	1	5	
	Total	27	23	50	

Table 4 presents the factors which are likely to influence the treatment of HVS at the Galkayo Hospital. Participants were more likely to give I.V fluids or blood to patient as treatment than give ORS or RESOMAL through N.G tube. Factors including the marital status of participants, position and the sex of participants were statistically significant at $P < 0.05$ (Refer to Table 4).

DISCUSSION

The study focused on the management of hypovolemic shock (HVS) among doctors and nurses of the Galkayo Hospital in Somalia. A cross sectional survey method was used to recruit participants who have practiced for at least five years. Participants included both nurses and doctors who have at least five years of management experience of HVS.

In this current study, fifty participants were recruited with the males being more than females. Mainly, male health workers are more likely to be involved in the treatment and management of HVS. Though Dorius and Firebaugh [12] explained the trends in the decline of gender inequality in most countries, our current study however reported more males than females. It could be explained that, in Somalia, males are more likely to occupy those white collar jobs and allows females to take care of their homes. There are generally more educated males in Somalia than females and thus, it is no surprising that the current trend is seen in this study as reported in the health surveys.

There were more nurses than doctors in this study. This is not surprising as nurses to patient ratio are more dominating than the doctor to patient and so it is an undeniable fact that, nurses outweigh the doctors in the management of HVS. This is confirmed by the report of Richardson and Maynard [13] that doctors are always fewer than nurses. They suggested that about 30 to 70% of work done by doctors could be done by nurses and hence, the study focused on assessing their experiences with regard to HVS.

The age of participants in this study ranged from 28 to 58 years with a mean age of 39.88 ± 8.09 years. The retiring age in Somalia is 70 years. Participants for this study reported very younger ages. A study involving nurses in the same community revealed younger age ranges with females dominating the profession [14].

Guidelines for Management of HVS: The study revealed that majority of health workers at the Galkayo Hospital

manages HVS according to the UNICEF and MSF guidelines. Few participants reported using the WHO and IMCI guidelines. The reason for this assertion is likely to be the most available. Many years ago, WHO and IMCI guidelines based on the fact that, most health workers are still acquainted with its usage. Though the scope of the current study did not cover reasons for the choice of guidelines, it could be explained that majority of health workers may use the guidelines which they are best conversant with. It will be appropriate that further studies explore the reasons for the preferred guidelines used in the management of HVS. Again, the IMCI for instance is the oldest guideline which older health workers were more conversant with and it will imply that, they may require some training on the use of the UNICEF and MSF guidelines. In the instance where this training is not available, doctors and nurses may prefer to use their already acquired skills and this may explain the phenomenon under study. It will also be appropriate that further studies may examine the knowledge base of the UNICEF and MSF guidelines to help policy maker's plan routine training to update workers on its application. It may also be appropriate that, the use of the guidelines is also researched across age groups to establish which age group are more familiar with the UNICEF and MSF guidelines.

During the management of HVS, a patient is supposed to be given IVF or blood for replacement of the loss of fluid [15]. An individual is given ORS and RESOMAL only when there is an indication of under nutrition and presents with HVS [15]. The current study revealed that, over 50% of participants reported they will give IVF or blood when they suspect HVS confirming the appropriate guideline. A vast majority of 44% could not mention the appropriate management guidelines revealing the limited level of knowledge in the application of the guidelines in the management of patients with HVS. It is likely that patient's recovery time in the hospital will increase and even some may die as a result of the treatment. It is appropriate that, research focusing on the assessment of patients' treatments is implemented to document the right causes of death of patients in the hospital. Senior health management officers must ensure that mortality audit are organised to help learn from the mistakes which may be disastrous in the cause of death resulting from negligence on the part of health workers. There should also be routine in service training workshops to keep health workers up to date on the appropriate guidelines for the management of HVS.

Factors Influencing the Choice of HVS Guidelines: The study revealed that, the marital status of participants and the type of occupation were more likely to influence which guideline to use in the management of HVS. The curricula used in the training of health workers (nurses and doctors) may influence strongly the decision in the selections though the later has not been researched. It is not surprising that, the choice of occupation influences the type of HVS guidelines. The study also revealed that marital status influenced the guideline selection. In Somalia, marriage is associated with occupation and so culturally, most men and women will only marry when they have found a signified job. Again, Somalian age at marriage is lower among the educated and so, it could be explained that, culturally, marriage affects the responsibilities at work. They become more careful with the treatment of their clients and such like in this case, the decision at choice of treatment guideline for patients with HVS were no exception. Again, one interesting factor realised in this study was that males were more likely to have used the appropriate guideline than females. The current study could not explain this phenomenon and therefore, it will be appropriate that further studies be carried out to establish in this hypothesis. Somalia has been a war torn area over the decades and therefore, health conditions are of concern. It is worth to mention that, institutions and organizations with health mandates engage the health sector in training and appropriate continuing professional development (CPD) which will enhance the practices of health workers and safeguard individual health in the sub-region.

CONCLUSIONS

The study found out that the use of guidelines for HVS is influenced by the occupation of health workers. Health workers in Somalia are more likely to use the UNICEF and MSF guidelines. Most patients with HVS are more likely to be treated with intravenous fluid or blood. The study revealed that some of the health workers still use the archaic protocols irrespective of the modern guidelines. It is therefore recommended that, the health ministry organises frequent training and evaluation of the health systems in the regard of shock management. This will improve the safety and prevention of death from shock related victims. Further studies focusing on the assessment of other areas of health is required to help improve the national and regional health of Somalia.

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Competing Interest: The authors declare that they have no competing interest whatsoever.

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