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# Original Article

# Assessment of Survival Rate in Cases of Hemorrhagic Shock - A Clinical Study

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***ABSTRACT*:**
**Background:**Hemorrhage occurs when there is excessive external or internal blood loss. Shock occurs when there is hypoperfusion of vital organs. The present study was conducted in the department of general medicine. **Materials & Methods:** The present study was conducted in the department of general medicine on 520 patients of both genders. An estimated blood loss more than 40% (more than 2000 ml for a 70 kg man) of blood volume and a SBP <90 mmHg was considered. **Results:** Out of 520 patients, males were 280 and females were 240. The difference was non- significant (P- 0.1).Out of 280 males, 198 survived and 82 died. Out of 240 females, 170 survived and 70 died. Common cause of shock was road traffic accident in males (120) and females (110), fall in males (100) and females (80) and assault in males (60) and females (50). The difference was significant (P< 0.05).SBP (mean± S.D) in males was 124± 16 and in females was 110± 12. Pulse (mean± S.D) in males was 108.2± 10 and in females was 106.4± 14. **Conclusion:** Hemorrhagic shock is the leading cause of deaths worldwide. Males had higher number as compared to females. The deaths were more in males.
**Key words:** Blood, Hemorrhagic shock, Hypoperfusion

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## INTRODUCTION

Hemorrhagic shock is a life‑threatening condition which continues to claim the lives of patients with major trauma all over the world, especially in middleand low‑income countries. It is the leading cause of potentially preventable death among trauma patients. Early recognition of trauma‑hemorrhagic shock (THS) followed by timely and appropriate intervention can save many lives. This shows the importance of comprehensive understanding of THS to improve patient survival.[1]

Hemorrhage occurs when there is excessive external or internal blood loss. A defined volume is difficult to measure in most situations, and the loss evaluated visually is often underestimated.

Shock occurs when there is hypoperfusion of vital organs. Hypoperfusion may be due to malfunction of the myocardium (cardiogenic shock), overwhelming infection leading to redistribution of circulating volume into the extravascular space (septic shock), or hypovolemia due to severe dehydration or hemorrhage (hypovolemic shock). Signs and symptoms of hemorrhagic shock will vary depending on the volume and rate of blood loss.[2]

In hemorrhagic shock, an acute reduction in blood volume leads to sympathetic compensation by peripheral vasoconstriction, tachycardia, and increased myocardial contractility, which in turn increases the myocardial demand for oxygen, to a level that cannot be maintained. Simultaneously, tissue hypoperfusion from precapillary vasoconstriction leads to anaerobic metabolism and acidosis. Tissue hypoxia, acidosis, and the release of various mediators lead to a systemic inflammatory response.[3]The present study was conducted in the department of general medicine.

## MATERIALS & METHODS

The present study was conducted in the department of general medicine. It comprised of 520 patients of both genders. All were informed regarding the study and written consent was obtained. Ethical clearance was taken from institutional ethical committee.

General information such as name, age, gender etc. was recorded. An estimated blood loss more than 40% (more than 2000 ml for a

70 kg man) of blood volume and a SBP <90 mmHg was considered. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## RESULTS

**Table I Distribution of patients**

| Total- 520 | |
|---|---|
| **Males** | Females |
| **280** | 240 |

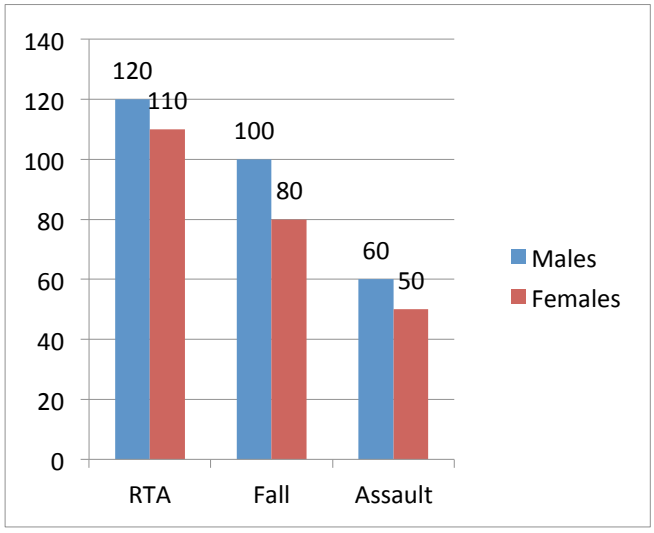
Table I shows that out of 520 patients, males were 280 and females were 240. The difference was non- significant (P- 0.1).

**Table II Outcome in terms of survival and death in patients**

| Gender | Survival | Death |
|---|---|---|
| **Males** | 198 | 82 |
| **Females** | 170 | 70 |
| **Total** | 368 | 152 |

Table II shows that out of 280 males, 198 survived and 82 died. Out of 240 females, 170 survived and 70 died.

**Graph I Mode of injury**




Graph I shows that common cause of shock was road traffic accident in males (120) and females (110), fall in males (100) and females (80) and assault in males (60) and females (50). The difference was significant (P< 0.05).

**Table III Parameters in patients**

| Parameters | Males | Females |
|---|---|---|
| **SBP (mean± S.D)** | 124± 16 | 110± 12 |
| **Pulse (mean± S.D)** | 108.2± 10 | 106.4± 14 |

Table III shows that SBP (mean± S.D) in males was 124± 16 and in females was 110± 12. Pulse (mean± S.D) in males was 108.2± 10 and in females was 106.4± 14.

## DISCUSSION

The symptoms and sequelae of hemorrhage are ultimately related to perfusion of tissues. Loss of less than, or equal to, 15% of blood volume may not be associated with any change in blood pressure (BP), pulse, or capillary refill. Mild shock is usually easily compensated, especially in the younger, healthy woman of reproductive age. Further losses lead to tachycardia, a catecholamine response characterized by increased sympathetic tone.[4]

Resting BP is usually normal, but orthostatic changes in BP and pulse may be evident. Simple resuscitative measures will successfully reverse these changes. Ongoing losses of blood volume

may overtake the heart's ability to compensate, and marked tachycardia is associated with a fall in BP, classified as moderate shock. With continued bleeding, hypoperfusion of tissues occurs,

leading to anaerobic metabolism and acidosis, classified as severe shock. The patient demonstrates marked tachycardia and tachypnea with respiratory failure, becomes oliguric, and then anuric.[5]Obtundation and loss of consciousness may also occur. Cellular dysfunction, followed by cell death, leads to multiple organ failure, resulting in irreversible shock. The mortality rate at this stage is in excess of 30%.

In present study, out of 520 patients, males were 280 and females were 240. Out of 280 males, 198 survived and 82 died. Out of 240 females, 170 survived and 70 died. SBP (mean± S.D) in males was 124± 16 and in females was 110± 12. Pulse (mean± S.D) in males was 108.2± 10 and in females was 106.4± 14. This is in agreement with Sperry et al.[6]

Trentzschet al[7], studied 7560 males and 2774 females to analyze sex differences in trauma‐hemorrhage patient. They found higher rates of multiple organ failure and sepsis ($P < 0.001$) in males when compared to females. Organ function of lung, cardiocirculatory system, liver, and kidney was better in females; however, there was no difference in mortality. Females in particular age group of 16–44 years had improved organ function which may indicate effects of sex hormones in females at reproductive age. Increased rates of sepsis in males were observed throughout virtually all age groups starting at 16 years of age.

Pankaj[8] in his study of seven hundred and eightyone patients were analyzed under three groups, overall group including all patients ($n$ = 781), male group ($n$ = 609), and female group ($n$ = 172). Mortality was significantly lower in females as compared to males following. Age, blood pressure, pulse, male gender, and fall and RTC as mode of injury (MOI) were independent predictors of mortality ($P < 0.05$) in overall group. Among males, age, pulse, and RTC as a MOI were significant ($P < 0.05$), while in females, only systolic blood pressure (SBP) was independent predictor of mortality.

Early resuscitation includes control of bleeding and restoration of circulating blood volume for oxygenation of tissues. Techniques to minimize blood loss should be applied whenever possible. Exposure of the bleeding site, experienced assistance, and sound knowledge of pelvic anatomy, as well as a calm, systematic approach to vascular areas, will be useful in the prompt control of hemorrhage.[9]

## CONCLUSION

Hemorrhagic shock is the leading cause of deaths worldwide. Males had higher number as compared to females. The deaths were more in males.

**REFERENCES**

1. Frink M, Pape HC, van Griensven M, Krettek C, Chaudry IH, Hildebrand F. Influence of sex and age on mods and cytokines after multiple injuries. Shock 2007;27:151‑6.
2. Yu HP, Chaudry IH. The role of estrogen and receptor agonists in maintaining organ function after trauma‑hemorrhage. Shock 2009;31:227‑37.
3. Deitch EA, Livingston DH, Lavery RF, Monaghan SF, Bongu A, Machiedo GW. Hormonally active women tolerate shock‑trauma better than do men: A prospective study of over 4000 trauma patients. Ann Surg 2007;246:447‑53.
4. Angele MK, Wichman M, Eisenmenger S. Immunologic effects of sex hormones following hemorrhagic shock: Potential therapeutic applications: A Review 2003;1:39‑45.
5. Kerby JD, McGwin G Jr., George RL, Cross JA, Chaudry IH, Rue LW 3rd. Sex differences in mortality after burn injury: Results of analysis of the National Burn Repository of the American Burn Association. J Burn Care Res 2006;27:452‑6.
6. Sperry JL, Nathens AB, Frankel HL, Vanek SL, Moore EE, Maier RV, et al. Characterization of the gender dimorphism after injury and hemorrhagic shock: Are hormonal differences responsible? Inflammation and the Host Response to Injury Investigators.Crit Care Med 2008;36:1838‑45.
7. Trentzsch H, Nienaber U, Behnke M, Lefering R, Piltz S. Female sex protects from organ failure and sepsis after major trauma haemorrhage. Injury 2014;45Suppl 3:S20‑8.
8. Pankaj RL, McGwin G Jr., Windham ST, Melton SM, Metzger J, Chaudry IH, et al. Age‑related gender differential in outcome after blunt or penetrating trauma. Shock 2003;19:28‑32.
9. Lehmann R, Beekley A, Casey L, Salim A, Martin M. The impact of advanced age on trauma triage decisions and outcomes: A statewide analysis. Am J Surg 2009; 197:571‑4.

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