

Aetiological pattern, presentation and short term outcome of meningitis in a tertiary care hospital

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Introduction

- Meningitis is the inflammation of leptomeninges (pia and arachnoid matter) covering the brain and spinal cord
- It may be infectious & also have some non infectious causes.
- Infectious causes of meningitis include bacteria, viruses, fungi, Mycobacteria, Lyme disease, Treponema pallidum and occasionally protozoa or other parasites.
- Non infectious causes of meningitis may be due to sarcoidosis, systemic lupus erythematosus with CNS involvement, tumor and leukemia.

Introduction contd..

- The Global Burden of Disease (GBD) Study 2016 estimated that the number of global meningitis cases increased from **2.50 million (95% UI 2.19–2.91) in 1990 to 2.82 million (2.46–3.31) in 2016**
- While global meningitis **deaths decreased by 21%** from 1990 to 2016, the overall burden of meningitis remains high
- Among the infectious meningitis bacterial meningitis is associated with high mortality globally, especially in the very young and elderly
- Despite many new antibacterial agents, bacterial meningitis fatality rates remain high, with reported rates between 2 & 30%

Aims & Objectives

General :

- To see the aetiological pattern, presentation and short term outcome of meningitis.

Specific :

- To see:
 - Socio-demographic data
 - Aetiology of meningitis
 - Clinical features of meningitis
 - Short term outcome of meningitis (within 7 days of appearance of sign & symptoms)

Methods

Study Design: Descriptive cross sectional study enrolling 111 adult patients.

Study place: Dhaka medical college Hospital (DMCH), Dhaka.

Study period: July, 2017 to December, 2017 (Six Months)

Sampling technique: Purposive

Methods Contd..

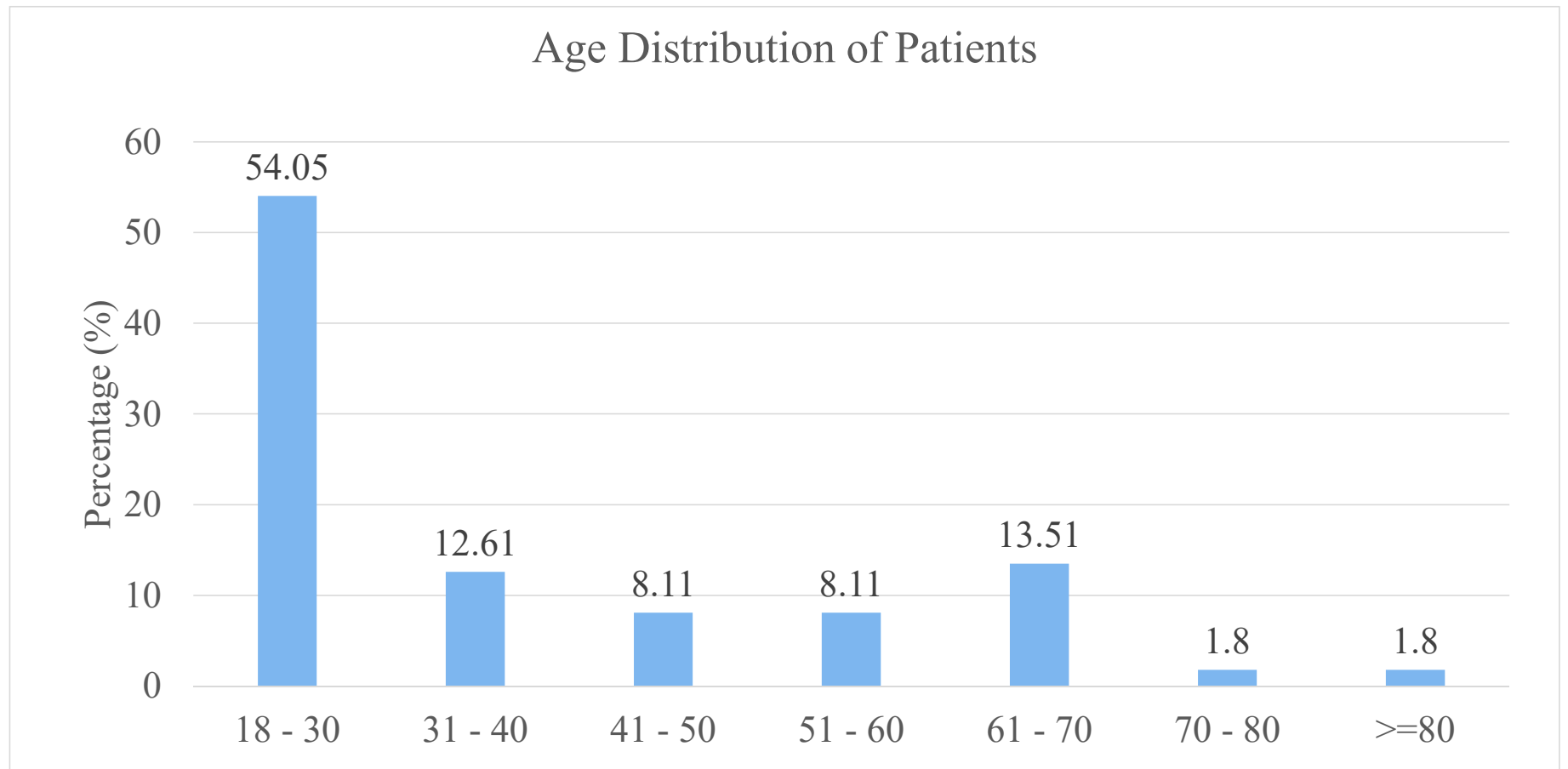
➤ Inclusion Criteria:

- Age \geq 18 yrs
- Patients with fever, neck stiffness & any one of the following symptoms (Headache, vomiting, altered mental status, photophobia, dizziness)

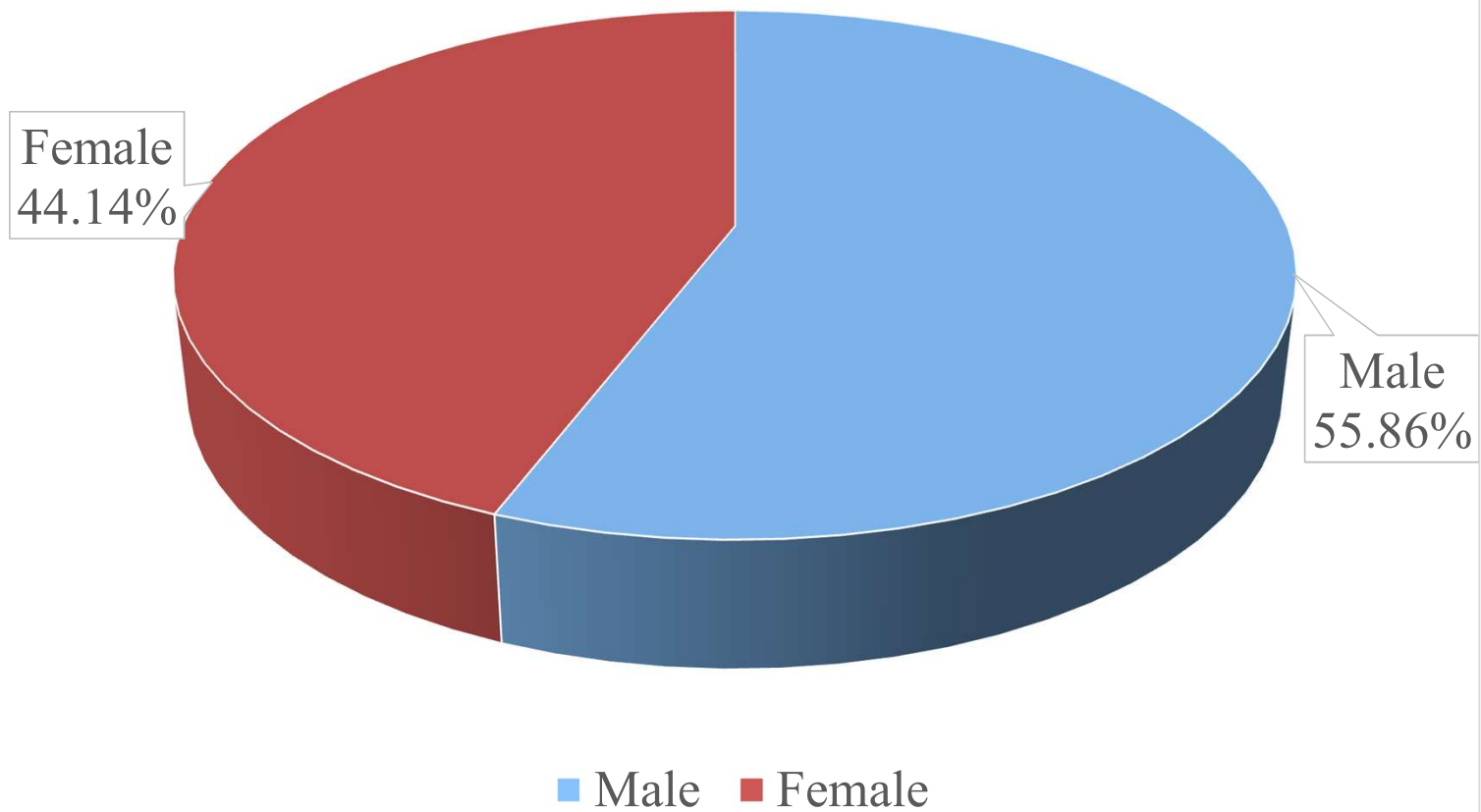
➤ Exclusion Criteria:

- Patient/Guardian of the patient who unwilling to give consent voluntarily.
- Patients with encephalopathy due to metabolic & endocrine causes.
- In Whom lumbar puncture & CSF study couldn't be done or contraindicated.

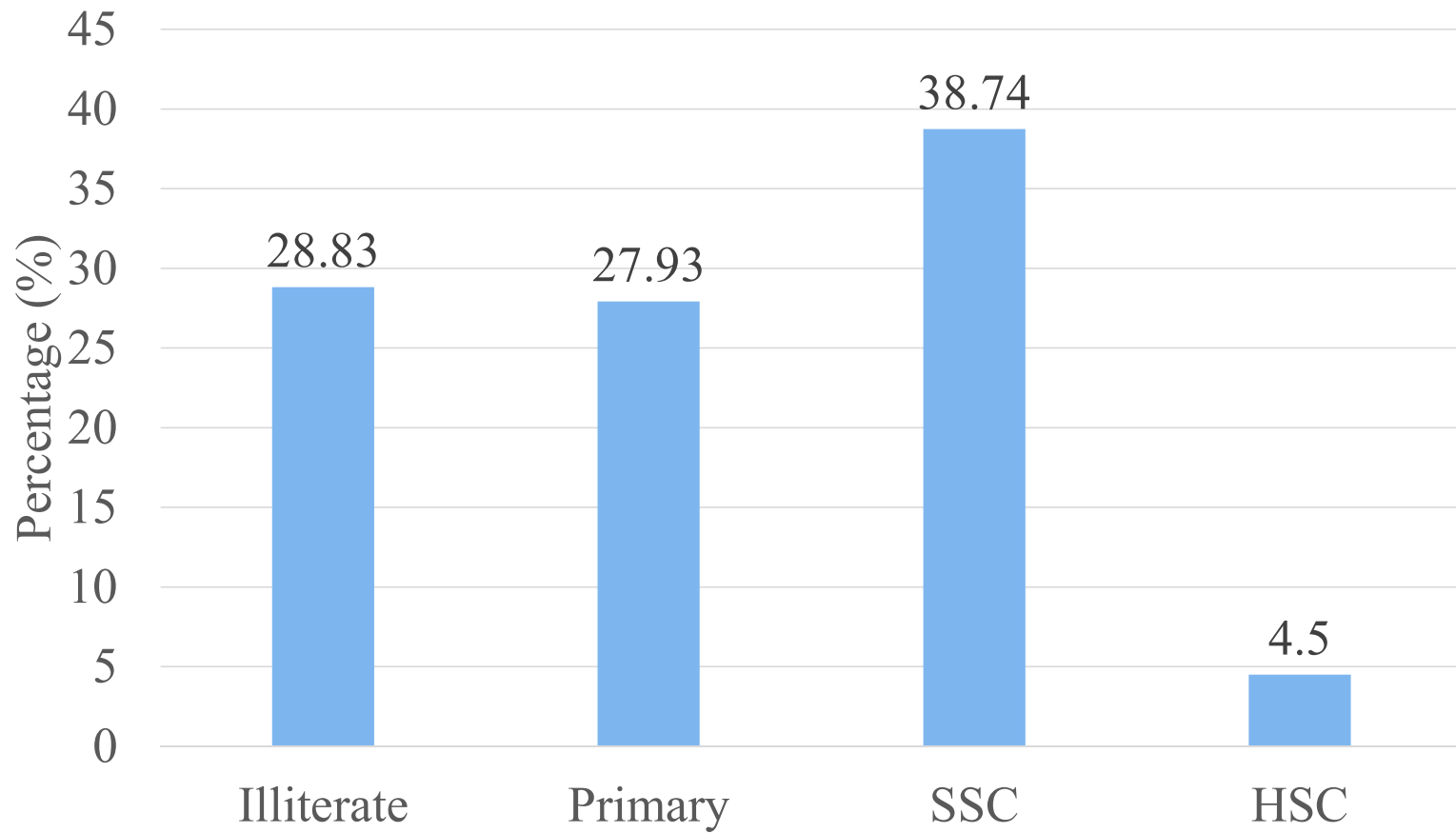
Results



Gender Distribution of Patients



Educational Qualificaiton of Patients



Clinical presentation of patients (n=111)

Presentation	Frequency	Percentage (%)
Fever	102	91.89
Headache	41	36.94
Vomiting	33	29.73
Disorientation	32	28.83
Altered consciousness	27	24.32
Drowsiness	6	5.41
Anorexia	4	3.6
Weakness	4	3.6
Convulsion	4	3.6
Rash	4	3.6
Bodyache	3	2.7
Confusion	3	2.7
Generalized weakness	3	2.7
Oral ulcer	2	1.8
Shortness of Breath	2	1.8

Multiple response considered

Signs of meningeal involvement among patients (n=111)

Signs	Frequency	Percentage (%)
Neck rigidity	103	92.79
Kernig's sign	36	32.43
GCS \leq 9	24	21.62
Planter extensor	11	9.91
Facial palsy	5	4.50
Papilledema	2	1.80

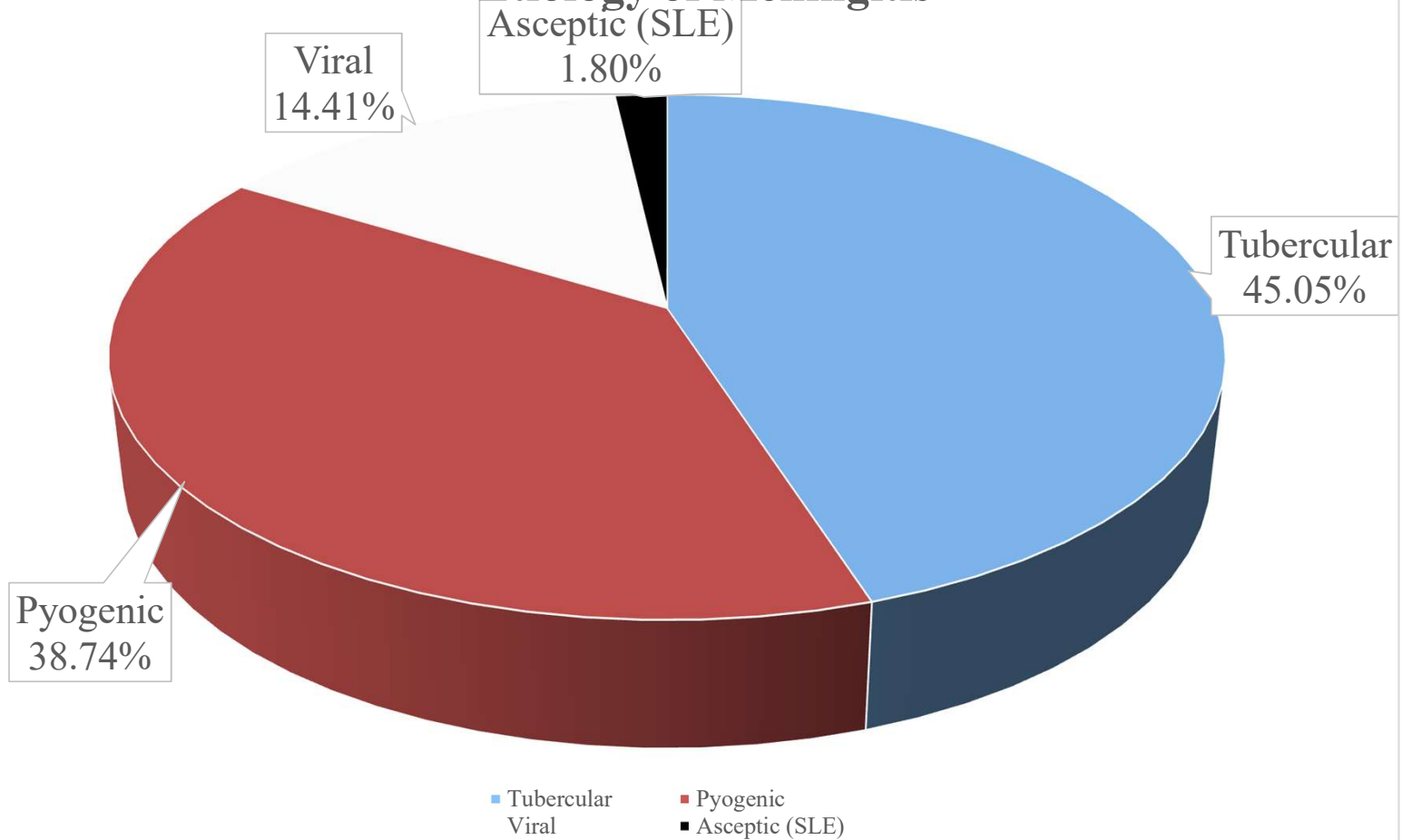
Multiple response considered

Co-morbidities among patients (n=111)

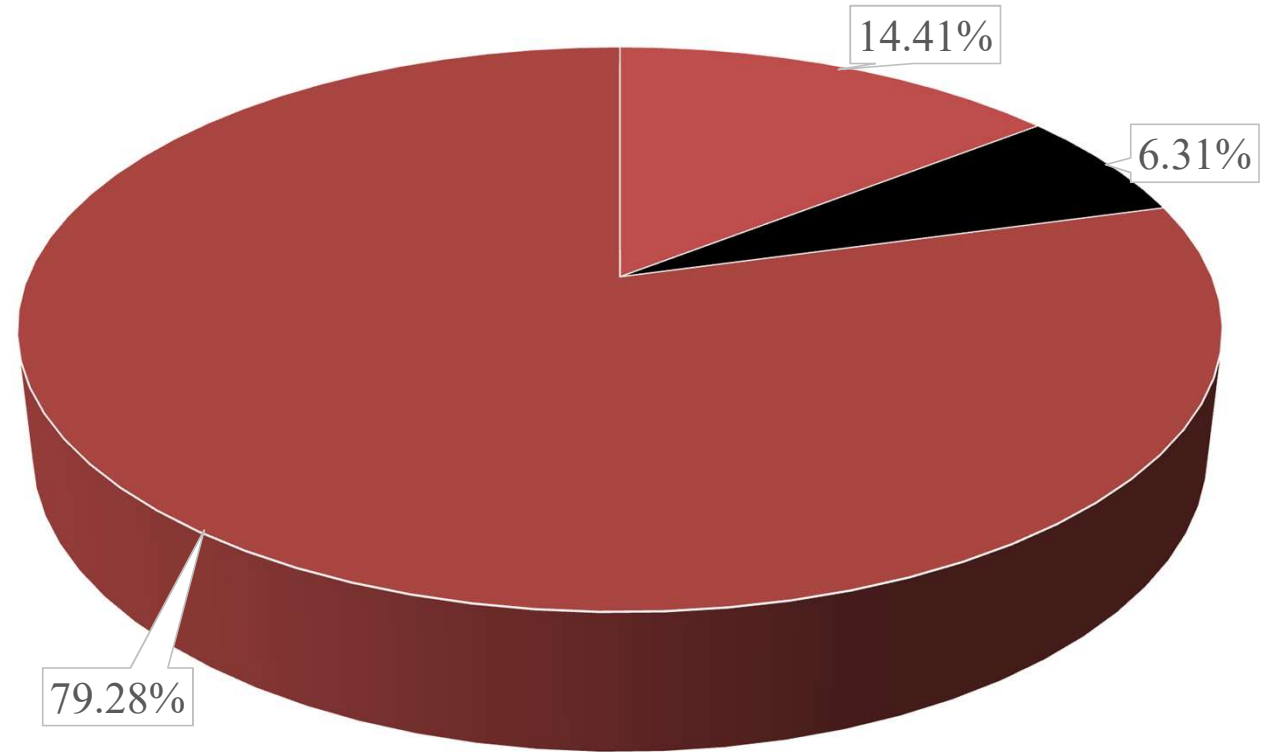
Co-morbidities	Frequency	Percentage (%)
Diabetes Mellitus	13	11.71
Hypertension	4	3.6
MI	2	1.8
TB	2	1.8
Bipolar	2	1.8
Hypothyroidism	2	1.8
Stroke	1	0.9
CKD	1	0.9

Multiple response considered

Etiology of Meningitis



Outcome of Patients



■ Death ■ Improved with disability ■ Improved without disability

Outcome of patients in relation to cause of meningitis(n=111)

Cause of meningitis	n(%)	Outcome		P value
		Died(n=12)	Survived(n=99)	
Pyogenic	n(%)	7 (16.28)	36 (83.72)	<0.001
Viral	n(%)	2 (12.50)	14 (87.50)	
Aseptic meningitis	n(%)	2 (100)	0	
Tubercular	n(%)	1 (2.0)	49 (98.0)	

P value determined by χ^2 test

Outcome of patients in relation to presence of comorbidities (n=111)

	Outcome		P value
Comorbidities	Died(n=12) n(%)	Survived (n=99)n(%)	
Present n(%)	3 (15.79)	16 (84.21)	0.443
Absent n(%)	9 (9.78)	83 (90.22)	

P value determined by χ^2 test

Limitations

- This is a single centre study & relatively small sample size.
- This study included patients who were admitted in the hospital and when the data were collected the patients were undergone medical treatment, So the findings which should be 100% certain some were absent due to treatment.
- The study was conducted at a public hospital in Dhaka city and the respondents of the research work were self-selected purposively, it cannot be assumed that this sample could be representative of the entire population of Bangladesh.

Recommendations

- ❑ The study findings will help to improve early diagnosis and treatment of meningitis patients in Bangladesh. From the study findings, necessary recommendations are as follows:
 - Further researches should be done to explore the exact situation of the whole country considering all limitations of this study.
 - Outcome in patients treated for ABM at the hospital was found to be poor. Thus, development of clinical guidelines for treatment of ABM that suit the local context is essential to improve patient management and outcome.

- Although different programme to combate the tuberculosis is going on but still Tubercular meningitis causes serious morbidity and disability to the patients so patients as well as healthcare provider should be more aware about early diagnosis and treatment of Tuberculosis.

Conclusion

- Meningitis is not only a disease of the people of lower socio-economic class who usually lead a poor quality life style but may affect higher socio-economic class also & it can occur at any age and sex.
- Acute bacterial meningitis is found to be more fatal so making an early diagnosis and providing early and accurate treatment, are lifesaving and to reduce morbidity.
- Though fatality is less in tubercular meningitis but it remain high in number and some cases are found to be as disseminated tuberculosis which imposes serious public health burden for the country.
- This study also reflects aseptic meningitis is not uncommon and its may be more dangerous if remains undiagnosed and untreated.

Thank you