

# Prevalence of aspiration Pneumonia in Stroke Patients at Tertiary Care Hospital

MUHAMMAD KHALID<sup>1</sup>, IFTIKHAR ALI KAKAR<sup>2</sup>, HARIS KHAN<sup>3</sup>, MUHAMMAD HAROON SHAHID<sup>4</sup>, HAZRAT ABBAS<sup>5</sup>, MUHAMMAD SALMAN<sup>6</sup>

<sup>1</sup>Associate Professor Medicine, Nowshera Medical College / Qazi Hussain Ahmad Medical Complex, Nowshera

<sup>2</sup>Pulmonologist, Senior Lecturer, Director Department of Medical Education, Bolan Medical College Quetta

<sup>3</sup>Department of Pharmacy, University of Swabi

<sup>4</sup>Assistant Professor Medicine, Nowshera Medical College / Qazi Hussain Ahmad Medical Complex, Nowshera

<sup>5</sup>Department of Biotechnology and Genetic Engineering, Hazara University, Mansehra

<sup>6</sup>Quaid-E-Azam Institute of Nursing and Health Sciences, Swabi

Corresponding author: Muhammad Haroon Shahid, Email: [Haroon92001@yahoo.com](mailto:Haroon92001@yahoo.com)

## ABSTRACT

**Background:** One of the major health problems after stroke is aspiration pneumonia which might cause death. Aspiration pneumonia occurs in patients both with ischemic stroke and hemorrhagic stroke.

**Objective:** To assess the prevalence of aspiration Pneumonia in stroke patients

**Methodology:** This descriptive and cross-sectional study was carried out at the Medicine department, Qazi Hussain Ahmad Medical Complex, Nowshera from July 2020 to July 2021. By using pre-designed Proforma, all the data including stroke type, name, age and gender of the patient and diagnosis of aspiration pneumonia were documented. All the analysis of the recorded data was carried out by employing SPSS version 24.

**Results:** In the current study, totally 180 patients were enrolled. There were 102 (56.67%) males participants while female participants were 78 (43.33%). On the basis of age distribution, 69 (38.335%) patients were observed in age group 40-60 years whereas 111 (61.67%) patients were observed in age group 61-80 years. The mean age (SD) in the current study was 61 (3.11) years. Based on type of stroke, 117 (65%) patients were observed with ischemic stroke whereas 63 (35%) patients were observed with hemorrhagic stroke. The overall frequency of aspiration pneumonia in stroke patients was 15.56% (n=28).

**Practical implication:** Our study will provide physicians with new data that early diagnosis for aspiration pneumonia in stroke patients should be done to reduce the morbidity and mortality rates.

**Conclusion:** Aspiration pneumonia is highly prevalent in stroke patients in our setting. Our study recommends that early diagnosis for aspiration pneumonia in stroke patients should be done to reduce the morbidity and mortality rates.

**Keywords:** Prevalence; aspiration Pneumonia; stroke; diagnosis; morbidity; mortality

## INTRODUCTION

The inhalation of content from oropharynx into the lower respiratory tract or larynx is called as aspiration pneumonia. With severe morbidity and mortality, aspiration may result in a wide range of lung problems including acute respiratory distress syndrome, chemical pneumonitis, airway blockage and pneumonia<sup>1</sup>. Aspirates may include liquids, food particles, blood, secretions, bacteria and other substances depending on their composition. Aspiration might entail recurrent bouts of micro aspiration, which almost ever result in acute symptoms<sup>2</sup>. According to the normal flora found in the mouth and upper respiratory tract, infections are often caused by a combination of aerobes and anaerobes<sup>3</sup>. Aerobes only become a major factor when an incident of aspiration occurs days or weeks before pneumonia first manifests<sup>4</sup>.

In medical terms, a stroke is the abrupt deterioration or loss of neurologic function due to a lack of blood flow to the brain<sup>5</sup>. In America, a stroke is the 3rd most common cause of death. It is estimated that there are around 700,000 strokes that take place each year, with roughly 550,000 being first strokes and approximately 400,000 being ischemic strokes. In the United States alone, there are more than 4 million people who have survived a stroke. This makes stroke the largest cause of disability in adult<sup>6</sup>. The prevalence of stroke varies significantly across nations and exponentially rises with age. In Western countries, localized cerebral ischemia brought on by artery blockage accounts for around 80% of stroke cases, whereas hemorrhages account for the remaining 20%<sup>7</sup>. It is more frequent to have an acute ischemic stroke than a hemorrhagic stroke and is brought on by the thrombotic or embolic obstruction of a cerebral artery<sup>8</sup>. A hemorrhagic stroke is brought on by the accumulation of blood in the tissue around a ruptured blood artery<sup>9</sup>. It is responsible for around 13% of all strokes, and the death rate linked with it is four times greater than the mortality rate associated with ischemic stroke. Survival rates in patients with hemorrhagic stroke are 38% after one year<sup>10</sup>. Hemorrhagic stroke patients often have more severe symptoms than ischemic stroke patients, but they also

present with localized neurologic abnormalities that are comparable to the patients with ischemic stroke<sup>11</sup>.

There is a high incidence of infection in the weeks and months after a stroke, and previous studies have shown that pneumonia in particular is a significant risk factor for poor long-term outcomes<sup>12</sup>. It is believed that dysphagia, which makes it possible for liquids, swallowed foods or oral secretions to be aspirated, is the major risk factor for developing pneumonia after having a stroke. There is data to support the hypothesis that treating dysphagia results in a decrease in the prevalence of pneumonia<sup>13</sup>. Even yet, pharyngeal dysphasia and stroke-induced pharyngitis are important intermediary factors linked to the emergence of aspiration pneumonia. Less research has been done on the impact of other risk factors and underlying diseases. Strategies in the delivery of coordinated stroke treatment should benefit from a deeper familiarity with the causes and immediate consequences of aspiration pneumonia<sup>14</sup>. Failure of respiration caused by a stroke necessitates intubation in up to 6% of ischemic stroke patients and 30% of hemorrhagic stroke patients. The use of a ventilator increases the patient's chance of developing pneumonia<sup>15</sup>. It is possible to avoid many occurrences of pneumonia after stroke by properly evaluating swallowing ability and changing oral intake<sup>16</sup>. Limited data is available about this issue in our country therefore this study was carried out with the aim to determine the prevalence of aspiration Pneumonia in stroke patients at tertiary care hospital.

## MATERIALS AND METHODS

This descriptive and cross-sectional study was carried out at the Medicine department, Qazi Hussain Ahmad Medical Complex, Nowshera. The duration of the current study was one year from July 2020 to July 2021. The sample size was 180 patients by taking 17% frequency of aspiration pneumonia amongst stroke patients, confidence level of 95% and margin of error as 7%<sup>17</sup>. The criteria for inclusion in our study was patients of both the gender with age range of 40 to 80 and diagnosed with stroke whereas the exclusion criteria was all the patients with previous

history of pneumonia and patients not willing to take part in our study. The study approval was taken from the ethical and research committee of the hospital. The main objective of the current research was explained to all the participants and then informed consent was taken. For the confirmation of aspiration pneumonia, all the required examinations like chest x-ray, physical examination sputum examination and total leukocyte count were carried out. By using pre-designed Performa, all the data including stroke type, name, age and gender of the patient and diagnosis of aspiration pneumonia were documented. All the analysis of the recorded data was carried out by employing SPSS version 24. For quantitative data, means and standard deviations were computed while for categorical data, frequencies and percentages were computed.

**RESULTS**

In the current study, totally 180 patients were enrolled. There were 102 (56.67%) males participants while female participants were 78 (43.33%). (Figure 1) On the basis of age distribution, 69 (38.335%) patients were observed in age group 40-60 years whereas 111 (61.67%) patients were observed in age group 61-80 years. The mean age (SD) in the current study was 61 (3.11) years. Based on type of stroke, 117 (65%) patients were observed with ischemic stroke whereas 63 (35%) patients were observed with hemorrhagic stroke. (Table 1) The overall frequency of aspiration pneumonia in stroke patients was 15.56% (n=28). (Figure 2)

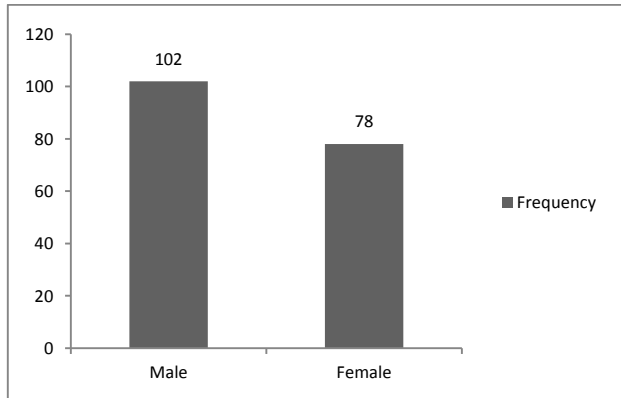


Figure 1: Gender wise distribution of patients

Table 1: Parameters of the participants in our study

Parameter	Sub-category	Frequency (%)
Age	40-60 years	69 (38.335%)
	61-80 years	111 (61.67%)
Type of stroke	Ischemic stroke	117 (65%)
	Hemorrhagic stroke.	63 (35%)

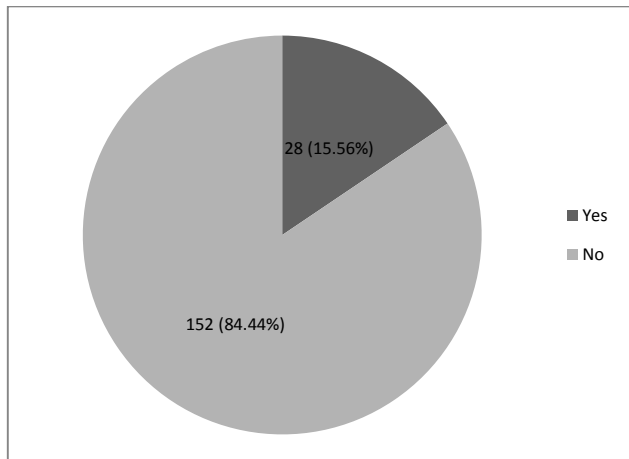


Figure 2: Aspiration pneumonia frequency in stroke patients

**DISCUSSION**

One of the major health problems after stroke is aspiration pneumonia which might cause death. Aspiration pneumonia occurs in patients both with ischemic stroke and hemorrhagic stroke but the frequency of aspiration pneumonia is high in acute ischemic stroke which is associated with high morbidity and mortality<sup>18</sup>. According to literature, very limited data is available on the prevalence of aspiration pneumonia in stroke patients.

In the current study, totally 180 patients were enrolled. There were 56.67% males participants while female participants were 43.33%. On the basis of age distribution, 38.335% patients were observed in age group 40-60 years whereas 61.67% patients were observed in age group 61-80 years. The mean age (SD) in the current study was 61 (3.11) years. High frequency of stroke was observed in patients with more age. These results were comparable to the previous study who reported high prevalence of stroke in old age patients<sup>19</sup>. Based on type of stroke, 65% patients were observed with ischemic stroke whereas 35% patients were observed with hemorrhagic stroke. The overall frequency of aspiration pneumonia in stroke patients was 15.56% (n=28). Similar findings were reported by a recent study in Iraq<sup>20</sup>. In the United Kingdom, the incidence of aspiration pneumonia was 3.9-45%<sup>21</sup>. In accordance with our results, a previous study, reported 17.89% prevalence of aspiration pneumonia in stroke patients<sup>22</sup>. A study carried out by Chamorro A et al. reported 7 to 22% prevalence of aspiration pneumonia in stroke patients<sup>23</sup>. Another study done by Finlayson O et al reported 7.1% prevalence of stroke associated pneumonia which is lower than our findings<sup>14</sup>. One of the previous study reported a very low prevalence of pneumonia (4.1%) associated with stroke<sup>24</sup>. Similar results were reported by a previous study<sup>25</sup>. A high prevalence of stroke related pneumonia (23%) than our study was reported in a study done by Lanspa M et al<sup>26</sup>. A high prevalence of stroke related pneumonia was also reported by another study<sup>27</sup>. Similar results were reported by a recent study carried out by imran et al<sup>17</sup>.

**CONCLUSION**

Aspiration pneumonia is highly prevalent in stroke patients in our setting. Our study recommends that early diagnosis for aspiration pneumonia in stroke patients should be done to reduce the morbidity and mortality rates.

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