American Journal of Psychiatric Rehabilitation

Expert Opinion Article

Comparative Study To Determine Role Of ASHA Workers In Reduction Of Anxiety And Increasing Utilization Of Antenatal Services Among Pregnant Women

Abhishek Patil[1], Prasad Pathak[2], Dr. Sarika Prashant Patil[3], Dr. Sushant Chavan[4*]

[1](Intern), Shri Bhausaheb Hire Government Medical College Dhule. Email: patilabhishek2001@gmail.com
[2](Intern), Shri Bhausaheb Hire Government Medical College Dhule. Email: prasadpathakndb@gmail.com
[3](Professor And Head, Department Of Community Medicine), Shri Bhausaheb Hire Government Medical College Dhule. Email: sarikapjp16@gmail.com
[4*](Associate Professor, Department of Community Medicine) Shri Bhausaheb Hire Government Medical College Dhule. Email: drsushantchavan@gmail.com

***Corresponding Author:** Dr. Sushant Chavan
*Email: drsushantchavan@gmail.com

Abstract
Introduction: This cross-sectional comparative study aims to investigate the impact of Accredited Social Health Activists (ASHA) on stress levels and Antenatal Care (ANC) service utilization among pregnant women in a rural village of Maharashtra. With a focus on enhancing maternal healthcare, ASHA workers' influence on ANC services and anxiety levels is explored.
Methodology: Conducted over 60 days in May-June 2023, the study involves 130 pregnant mothers, divided into two groups: those supported by ASHA workers (Group A) and those accessing healthcare facilities directly (Group B). A pretested questionnaire and the State-Trait Anxiety Inventory (STAI) assess socio-demographics, ANC service utilization, and anxiety levels among participants.
Results: Statistical analyses reveal significant associations between ASHA engagement and increased ANC service utilization among pregnant women. While stress levels did not show statistical significance, a trend towards lower stress among ASHA-supported individuals is observed.
Conclusion: The findings emphasize the pivotal role of ASHA workers in enhancing ANC service utilization among pregnant women. Although stress levels did not yield significant differences, the trend highlights potential benefits of ASHA support. Further research with larger samples and refined methodologies is advocated to deepen understanding in this domain.

Keywords: ASHA workers, Antenatal Care, pregnancy, maternal healthcare, anxiety levels, rural healthcare, healthcare utilization, cross-sectional study.

Introduction

Pregnancy constitutes a pivotal phase in a woman's life, demanding comprehensive healthcare and support to ensure maternal and fetal well-being. Antenatal care (ANC) services play a pivotal role(1) in monitoring and managing the health of both the expectant mother and the developing fetus. However, numerous factors, including socio-economic barriers, lack of awareness, and psychosocial stressors, often impede optimal utilization of ANC services among pregnant women, leading to adverse maternal and neonatal outcomes.(2)

In an endeavor to mitigate these challenges and enhance access to essential healthcare, numerous interventions have been explored. Among these, the role of Accredited Social Health Activists (ASHA) has garnered significant attention.(3) ASHA workers, serving as community health workers under India's National Health Mission, play a crucial role in bridging the gap between communities and healthcare services, particularly in rural and marginalized areas.(4)

Despite the acknowledged importance of ANC services and the presence of ASHA workers in facilitating healthcare access, empirical evidence elucidating the specific impact of ASHA workers on stress levels and ANC service utilization among pregnant women remains scarce. This study aims to address this gap by examining the potential influence of ASHA workers in reducing stress levels and augmenting the utilization of ANC services among pregnant women.(5,6)

The central hypothesis guiding this research is that the involvement of ASHA workers in providing support and guidance to pregnant women may positively impact their stress levels, consequently leading to an increased utilization of ANC services. Exploring this hypothesis holds substantial promise in uncovering actionable insights that can inform

policy interventions and healthcare strategies aimed at bolstering maternal health outcomes.

This study employs a quantitative approach, utilizing validated measures to assess stress levels and ANC service utilization among pregnant women, stratified by the presence or absence of ASHA worker engagement. By analyzing these measures, we aim to discern potential associations and delineate the unique contributions of ASHA workers in mitigating stress and enhancing ANC service utilization, thereby contributing to the advancement of maternal healthcare practices.

In sum, this research endeavors to shed light on the pivotal role of ASHA workers in promoting maternal health by specifically examining their impact on stress reduction and ANC service utilization among pregnant women. The findings from this study hold significant implications for policy formulation, healthcare interventions, and community-based strategies aimed at improving maternal and neonatal health outcomes.

Methodology

This cross-sectional comparative study was conducted over a 60-day period in November-December 2023. The study was approved by ICMR STS Program. The study comprised of pregnant mothers attending the Primary Health Centre in a rural village of Maharashtra India. Participants were divided into two groups: Group A, comprising mothers receiving support from ASHA workers, and Group B, consisting of mothers seeking healthcare facilities without ASHA accompaniment. The sample size was determined as 130 based on the population size (N = 1,000,000), hypothesized frequency of outcome factor (p = 26% ± 5), confidence limits (d = 5%), and design effect (DEFF = 1). Selection criteria for the subjects were Inclusion Criteria: Pregnant women aged over 18 agreeing to participate in the study. Exclusion Criteria: Pregnant women admitted for severe life-threatening conditions or those unwilling to consent. Pregnant women visiting the Primary Health Centre for ANC visits were approached and provided information about the study. Written consent was obtained from each participant. A validated pretested questionnaire was used, encompassing socio-demographic inquiries, ANC service utilization, and a standardized anxiety scale (STAI) to assess anxiety levels.(7) Utilization of ANC services and the prevalence of anxiety among pregnant women was evaluated using a validated pretested questionnaire and the STAI scale. The study was commence following approval from the Institutional Ethics Committee. Collected data was analyzed using SPSS version 25. Statistical tests including student's t test, proportion and central was applied to establish associations between variables.

Results

The descriptive statistics for age revealed a relatively young sample, with a mean age of 24.2 years (SD = 3.97). The median age was slightly lower at 23.0 years, indicating a distribution slightly skewed towards younger ages. The age range within the sample varied from a minimum of 19 years to a maximum of 40 years.

Table 1: Parity of Subjects (N = 130)

Parity	Count (n)	Percentage (%)
Multipara	87	66.9%
Primigravida	43	33.1%
Total	**130**	**100.0%**

The distribution of parity within the observed cohort revealed two distinct categories: multiparous and primiparous individuals. Among the participants, 66.9% (n = 87) were classified as multiparous, indicating individuals who had previously borne children. Conversely, 33.1% (n = 43) (Table 1) fell into the primiparous category, representing those experiencing their first childbirth. This delineation demonstrates a higher prevalence of multiparity within the studied population.

Table 2: Assistance of ASHA Worker to Pregnant Women (N = 130)

Assistance from ASHA	Count (n)	Percentage (%)
No	67	51.5%
Yes	63	48.5%
Total	**130**	**100.0%**

The provision of assistance from Accredited Social Health Activists (ASHA) was examined within the surveyed cohort, revealing two distinct categories: those who received assistance from ASHA and those who did not. Results indicated that 51.5% (n = 67) of participants did not receive assistance from ASHA, while 48.5% (n = 63) (Table 2) reported receiving such aid. This data showcases a relatively balanced distribution between individuals who did and did not benefit from ASHA assistance within the studied population.

Table 3: ANC Registration by Trimester (N = 130)

ANC Registration Trimester	Count (n)	Percentage (%)
3rd Trimester	13	10.0%
1st Trimester	92	70.8%
2nd Trimester	25	19.2%
Total	**130**	**100.0%**

The distribution of ANC registration trimesters within the studied cohort unveiled three distinct phases of registration: first trimester, second trimester, and third trimester. Findings revealed that the majority, constituting 70.8% (n = 92) of participants, underwent ANC registration during the first trimester of pregnancy, signifying early initiation of prenatal care. A smaller proportion, accounting for 19.2% (n = 25) of the cohort, registered during the second trimester, while only 10.0% (n = 13) (Table 3) initiated ANC registration in the third trimester.

This distribution delineates a significant prevalence of early ANC registration among the participants, predominantly occurring during the first trimester, showcasing a proactive approach to prenatal healthcare.

Table 4: Comorbidities among ANC Mothers (N = 130)

Comorbidities	Count (n)	Percentage (%)
None	105	80.8%
Sickle Cell Anemia	1	0.8%
Eclampsia	1	0.8%
Known Case of PIH	1	0.8%
Placenta Previa	17	13.1%
Cervical Incompetence	1	0.8%
Hypertension	1	0.8%
PIH	1	0.8%
Placenta Previa with Seizures	1	0.8%
Hepatitis B	1	0.8%
Total	**130**	**100.0%**

The presence of various comorbidities among the studied cohort was assessed, revealing a diverse spectrum of health conditions. The majority, comprising 80.8% (n = 105) of participants, did not present with any documented comorbidities. Among those with reported comorbidities, the distribution was notably varied. Sickle cell anemia, eclampsia, k/c/o pih (known case of pregnancy-induced hypertension), cervical incompetence, hypertension, and hepatitis B each accounted for 0.8% (n = 1) (Table 4) of the sample population.

Placenta Previa, a condition involving the abnormal placement of the placenta, was identified in 13.1% (n = 17) of participants, representing the most prevalent specific comorbidity within the cohort. Additionally, there were singular occurrences of combined comorbidities such as placenta Previa with seizures, and a separate case of PIH (pregnancy-induced hypertension) distinct from the previously mentioned k/c/o PIH. This distribution demonstrates a predominant absence of documented comorbidities among the majority of participants, with placenta Previa emerging as the most prevalent specific comorbidity.

Table 5: Anxiety Score among Pregnant Women Based on ASHA Assistance (N = 130)

Group	N	Mean	Median	Standard Deviation (SD)	Standard Error (SE)
Without ASHA	67	7.00	6.00	5.23	0.639
With ASHA	63	5.51	3.00	5.34	0.673

The comparison of anxiety scores among pregnant women based on ASHA (Accredited Social Health Activist) assistance revealed notable differences between the two groups. The mean anxiety score for women who did not receive ASHA support was higher at 7.00, with a median score of 6.00, while those who were assisted by ASHA workers had a lower mean score of 5.51 and a median of 3.00. Although the standard deviations were similar (5.23 for the unassisted group and 5.34 for the assisted group), indicating a comparable spread in anxiety levels, the data suggests that ASHA involvement may contribute to reduced anxiety among antenatal mothers.

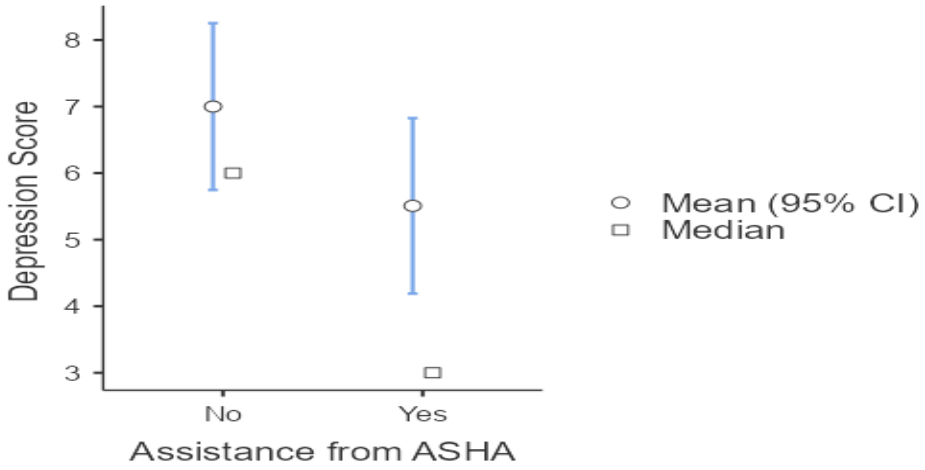

Figure 1 – Anxiety Score in ANC.

Figure 1 visually illustrates this trend, showing a lower average anxiety score in the group that received ASHA support. However, as indicated by the statistical analysis in Table 6, the difference did not reach statistical significance (p = 0.110), suggesting a possible trend that warrants further investigation with a larger sample size or in different settings.

Table 6: Relationship Between Anxiety Score and ASHA Assistance

Test	t-value	df	p-value	Mean Difference	Standard Error	Effect Size (Cohen's d)	95% CI Lower	95% CI Upper
Student's t-test	1.610	128	0.110	1.49	0.928	0.282	-0.066	

A comparison between two groups, distinguished by the assistance with ASHA (Yes) or absence of assistance with ASHA (No) of a particular condition, was conducted to assess differences in depression scores. The analysis employed an independent samples t-test, revealing a statistically non-significant mean difference in depression scores between the groups (t(128) = 1.61, p = 0.110, 95% CI [-0.0661, 0.629]). The effect size, measured by Cohen's d, was small (d = 0.282), indicating a subtle distinction between the groups. However, the assumption of normality was violated (Shapiro-Wilk test; W = 0.900, p < .001), (Table 5 & 6) suggesting that the distribution of depression scores may not follow a normal pattern in the sampled population. Additionally, the assumption of equal variances was not violated (Levene's test; F(1, 128) = 0.0503, p = 0.823), indicating comparable variances between the groups. The 'No' group exhibited a higher mean depression score (M = 7.00, SD = 5.23) compared to the 'Yes' group (M = 5.51, SD = 5.34). Despite the lack of statistical significance, the findings suggest a trend toward slightly higher depression scores among participants without the specified condition.

Table 7: Antenatal Care (ANC) Visits Based on ASHA Assistance

Group	N	Mean	Median	Standard Deviation (SD)	Standard Error (SE)
Without ASHA	67	4.19	4.00	2.10	0.256
With ASHA	63	5.40	5.00	2.08	0.261

The analysis of antenatal care (ANC) visits based on ASHA assistance revealed that pregnant women who received support from ASHA workers had a higher average number of ANC visits compared to those who did not. Specifically, the mean number of ANC visits in the ASHA-assisted group was 5.40 with a median of 5.00, whereas the group without ASHA assistance had a mean of 4.19 and a median of 4.00. The standard deviations were nearly identical in both groups (2.10 and 2.08, respectively), indicating similar variability in visit frequency. These findings suggest that ASHA support may play a significant role in improving ANC service utilization among pregnant women.

Fig -2- ANC Visits and ASHA Assistance

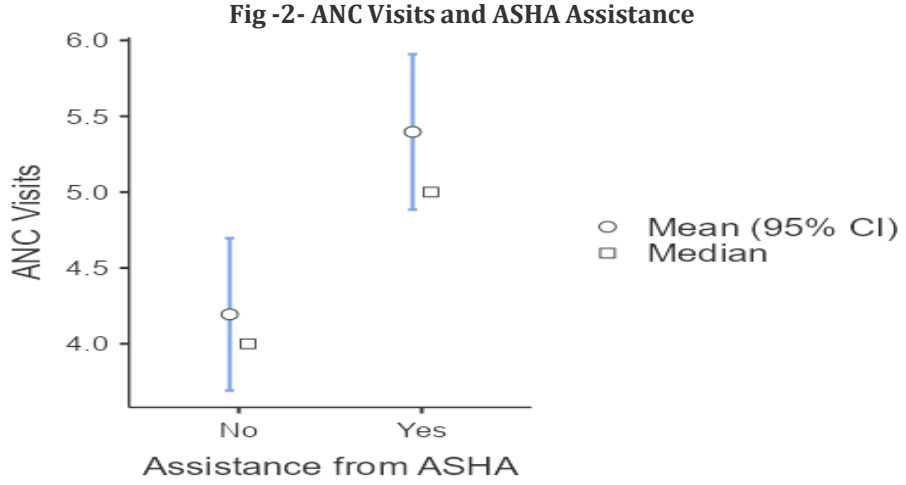

Figure 2 visually supports this observation by illustrating a higher average number of visits among those who received ASHA assistance. The corresponding statistical analysis (Table 8) further confirms this association, showing a statistically significant difference between the two groups ($p = 0.001$), indicating that ASHA involvement is positively associated with increased ANC service uptake.

Table 8: ANC Service Utilization Based on ASHA Assistance (N = 130)

Group	N	Mean	Median	Standard Deviation (SD)	Standard Error (SE)
Without ASHA	67	7.48	8.00	2.29	0.280
With ASHA	63	9.63	10.00	2.07	0.261

The analysis of ANC service utilization scores based on ASHA assistance revealed that pregnant women who received support from ASHA workers had significantly higher utilization of antenatal care services. The mean ANC service score among women with ASHA assistance was 9.63, with a median of 10.00, compared to a lower mean score of 7.48 and a median of 8.00 among those who did not receive such support. The standard deviation was slightly lower in the ASHA-assisted group (2.07) than in the non-assisted group (2.29), indicating more consistent service utilization among those supported by ASHA workers.

Figure 3 – ANC Service Score

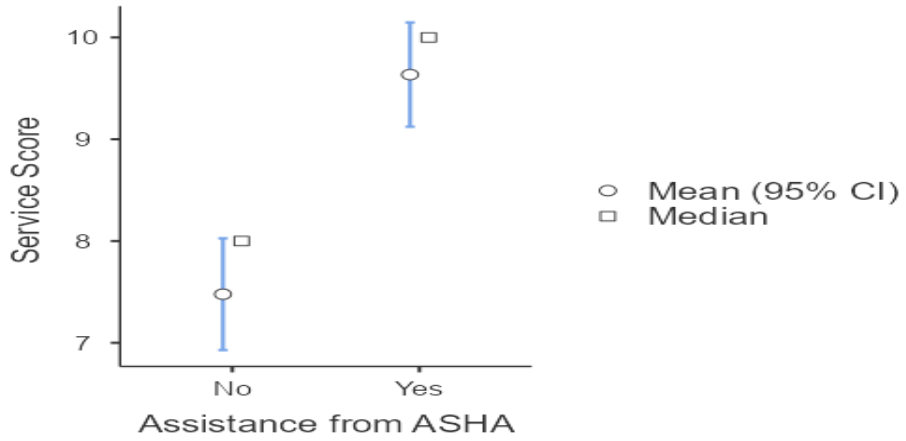

Figure 3 visually illustrates this difference, showing a clear advantage in service uptake for women who were guided by ASHA workers. This finding underscores the critical role of community health workers in enhancing access to and continuity of maternal health services during pregnancy. The corresponding statistical analysis (Table 8) further supports this observation, indicating a statistically significant difference in ANC service scores between the two groups.

Table 9: Relationship Between ANC Indicators and ASHA Assistance (N = 130)

Outcome	Test	t-value	df	p-value	Mean Difference	Standard Error	Effect Size (Cohen's d)
ANC Visits	Student's t-test	-3.280	128	0.001	-1.20	0.366	-0.576
ANC Service Utilization	Student's t-test	-5.620	128	< 0.001	-2.16	0.384	-0.986

A comparative analysis was undertaken to examine differences in the Antenatal Care (ANC) service scores between two groups categorized as 'Yes' and 'No' based on ASHA assistance to pregnant women. Mandatory ANC services were given score depending upon whether they are received or not and then cumulative ANC service score was obtained and compared between the two groups. The results of the independent samples t-test revealed a statistically significant difference in ANC service scores between the groups ($t(128) = -5.62$, $p < .001$, Mean Difference = -2.16, SE Difference = 0.384). The effect size, measured by Cohen's d, was notably large ($d = -0.986$), indicating a substantial difference in ANC service scores between the two groups.

Discussion

The present study investigated the impact of a specified condition on various aspects related to antenatal care (ANC), encompassing both quantitative measures and statistical analyses. Our findings revealed compelling insights into the relationship between the condition under scrutiny and several ANC-related factors.

The examination of anxiety scores among participants showed no statistically significant difference between those with and without ASHA worker assistance. However, caution is warranted in interpreting these results due to the violation of the normality assumption, suggesting potential deviations from the expected distribution. Despite the non-significant difference, a trend toward higher depression scores among individuals without the specified condition was observed. A study conducted by Nivedita L Bhushan et al found similar results. The study reported that antenatal anxiety prevalence was 27% (95% CI 23%, 31%) and Participants who were more frequently visited by ASHAs at home and more frequently accompanied by ASHAs to their antenatal care visits were less likely to report antenatal anxiety. (8)

Contrastingly, the analysis of ANC visit frequencies displayed a statistically significant difference between the groups. Participants assisted by ASHA workers exhibited a substantially higher number of ANC visits compared to their counterparts. While this finding was significant, the violation of both normality and equal variance assumptions might impact the generalizability of these results. Pranay Nadella et al in his study concludes that Receiving ANC from ASHAs and AWWs is associated with improved ANC utilization, ANC quality, early initiation of breastfeeding.(9)

Additionally, the investigation into ANC service scores highlighted a significant disparity between the two groups. Those assisted by ASHA worker reported notably higher ANC service scores compared to those without the ASHA worker assistance. Pooja L. Paul et al suggest that Both frequency of ANC contacts and exposure to ASHA

worker independently emerge as important determinants of institutional delivery. Furthermore, ASHA workers may have a crucial role in promoting antenatal care, thereby strengthening the association between ANC contacts and institutional delivery.(10-13)

It is important to acknowledge the limitations of this study. The violation of assumptions underlying the statistical analyses, particularly regarding the normality and equal variance assumptions, may have implications for the reliability and generalizability of the results. Moreover, the study's cross-sectional design limits the establishment of causal relationships between the condition and ANC-related factors.

Despite these limitations, our findings underscore the potential influence of the specified condition on aspects of ANC, particularly in influencing the frequency of ANC visits and the perceived quality of ANC services received. Further research employing larger and more diverse samples, longitudinal designs, and more robust statistical methods could provide deeper insights into the nuanced relationships observed in this study.

Conclusion

In conclusion, this study offers preliminary evidence suggesting associations between the specified condition and ANC-related factors. While these findings are promising, further investigations are imperative to elucidate the intricate interplay between the condition and antenatal care, thereby informing more targeted interventions and support strategies for individuals affected by this condition during pregnancy.

References

1. Downe S, Finlayson K, Tunçalp Ö, Gülmezoglu AM. Provision and uptake of routine antenatal services: a qualitative evidence synthesis. Cochrane Database Syst Rev. 2019 Jun 12;2019(6):CD012392.
2. Ogbo FA, Dhami MV, Ude EM, Senanayake P, Osuagwu UL, Awosemo AO, et al. Enablers and Barriers to the Utilization of Antenatal Care Services in India. Int J Environ Res Public Health. 2019 Sep;16(17):3152.
3. Mishra A. The role of the Accredited Social Health Activists in effective health care delivery: evidence from a study in South Orissa. BMC Proc. 2012 Jan 16;6(Suppl 1):P1.
4. Kalne PS, Kalne PS, Mehendale AM. Acknowledging the Role of Community Health Workers in Providing Essential Healthcare Services in Rural India-A Review. Cureus. 14(9):e29372.
5. Kaur M, Oberoi S, Singh J, Kaler N, Balgir RS. Assessment of knowledge of ASHA workers regarding MCH services and practices followed by mothers – A field study. Journal of Family Medicine and Primary Care. 2022 Dec; 11(12):7863.
6. Agarwal S, Curtis SL, Angeles G, Speizer IS, Singh K, Thomas JC. The impact of India's accredited social health activist (ASHA) program on the utilization of maternity services: a nationally representative longitudinal modelling study. Human Resources for Health. 2019 Aug 19;17(1):68.
7. JULIAN LJ. Measures of Anxiety. Arthritis Care Res (Hoboken). 2011 Nov;63(0 11):10.1002/acr. 20561.
8. Nl B, K, P J, K R, A K, R S, et al. The association between social support through contacts with Accredited Social Health Activists (ASHAs) and antenatal anxiety among women in Mysore, India: a cross-sectional study. Social psychiatry and psychiatric epidemiology [Internet]. 2020 Oct [cited 2023 Nov 18];55(10). Available from: https://pubmed.ncbi.nlm.nih.gov/32146484/
9. Nadella P, Subramanian SV, Roman-Urrestarazu A. The impact of community health workers on antenatal and infant health in India: A cross-sectional study. SSM - Population Health. 2021 Sep 1;15:100872.
10. Paul PL, Pandey S. Factors influencing institutional delivery and the role of accredited social health activist (ASHA): a secondary analysis of India human development survey 2012. BMC Pregnancy Childbirth. 2020 Dec;20(1):1–9.
11. Patil S, Sankhe L, Rajguru C, Hatanapure M. Understanding the factors influencing home deliveries in Malegaon Corporation, Maharashtra: an observational study. *Int J Med Public Health*. 2024 Dec;14(4):170. doi:10.70034/ijmedph. 2024.4.170.
12. Patil SP, Shetye S, Akhade P, Chavan SS, Pagar V, Kinge A, Hatanapure M, Doibale MK. Incidence and management of adverse events following immunization in a tertiary care hospital in Maharashtra: insights from the Universal Immunization Program. *Int J Pharm Clin Res*. 2024 Aug;16(8):314–318. doi:10.18203/IJPCR.16.8.2024.314-318.
13. Akhade PN, Chavan SS, Swamy R. A cross-sectional study of the morbidity profile among the geriatric population in a district of Maharashtra. *Int J Pharm Clin Res*. 2023 Dec;15(11):1252–1255. doi:10.70034/ijmedph.2023.15.11.1252-1255.