

# Silent monster inside the ear! Understanding the level of awareness about Cholesteatoma in hospital visitors of Puducherry.

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## Research Article

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# Abstract

**Aims:** With the COVID-19 pandemic resulting in most centres postponing the non-emergency services, there is a potential risk of under reporting of uncomplicated cholesteatoma cases, due to lack of symptoms and awareness. This study aims to assess the level of knowledge about CSOM, especially cholesteatoma and related harmful practices among general population.

**Methods:** All consenting adult hospital visitors, irrespective of their purpose of visit were invited to participate in this questionnaire based, cross sectional study at the preregistration point of the tertiary care teaching hospital. Data was collected and analyzed using appropriate methods.

**Results:** Among 350 respondents, majority exhibited poor level of knowledge about general perceptions about ear infections [295(84.3%)], perceptions about cholesteatoma[246(70.3%)] knowledge about intratemporal complications[244(69.7%)] knowledge about intracranial complications[247(70.6%)] and harmful practices in ear disease patients[279(79.7%)].Multivariate analysis of socio-demographic and ear disease history related characteristics with overall ear disease related knowledge has shown that unskilled workers and unemployed respondents have poor knowledge levels compared to their counterparts, but at the same time the study has found that respondents with higher level of education also exhibited poor levels of knowledge in contrary to the existing evidence.

**Conclusion:** This study highlights the lack of awareness about CSOM, especially cholesteatoma and its complications, harmful practices mainly in rural population, even in well educated groups, and the need for health education measures to create awareness among the general population regarding various areas of concern, to prevent a potential increase in the incidence of complications, especially during and post COVID-19 pandemic.

## Summary

1. Cholesteatoma, usually reported late due to the scarcity of symptoms and signs.
2. Poor levels of knowledge about CSOM, especially cholesteatoma and complications among general population, mainly in rural areas.
3. Lower levels of knowledge about the disease even among highly educated groups.
4. Urgent need for measures to create awareness about the condition among the general population, to prevent a potential increase in the incidence of complications during and post Covid-19 pandemic era.

## Introduction

Chronic Suppurative Otitis Media(CSOM) is a long-standing inflammatory condition of the middle ear cleft with or without tympanic membrane perforation. It is one of the most common diseases

encountered in clinical practice. The prevalence of CSOM in India is 7.8%, thus belonging to countries with the highest prevalence (>4%).<sup>1</sup>

CSOM is mainly classified into tubotympanic type and atticointral type, the latter having a propensity to develop cholesteatoma. Cholesteatoma is a serious ear disease, defined as a mass formed by the keratinizing squamous epithelium in the tympanic cavity and/or mastoid and subepithelial connective tissue and by the progressive accumulation of keratin debris with/without a surrounding inflammatory reaction.<sup>2</sup> Atticointral type of CSOM with Cholesteatoma has more chances of developing complications that can impair the quality of life or can be life-threatening.<sup>3</sup>

There is only a minimal role of medical treatment in cholesteatoma. Once a cholesteatoma is found, surgical treatment is the only choice.<sup>4</sup> Advising surgery to an asymptomatic patient or with minimal complaints could be quite challenging for the surgeon and could be upsetting to the patient or caregivers.

CSOM complications, despite its reduced incidence still pose a great challenge in developing countries, as the disease present in the advanced stage leading to difficulty in management and consequently higher morbidity.<sup>5</sup> Due to the COVID-19 pandemic, most centers are postponing non-emergency surgeries. With limited availability of routine consultations, lack of telemedicine services, added with a lack of awareness about cholesteatoma and its potential complications can result in delayed diagnosis and treatment. Thus urgent attention is needed to deal with a public health problem.

Hence, this study was undertaken to assess the level of awareness about CSOM, especially cholesteatoma and its complications, various harmful practices considered safe by the general population of Southern India. This may hugely help in taking steps to create awareness among general population regarding the condition and the areas of ear health education to concentrate on and to stress the need to seek medical advice, thus reducing the chances of complications.

## Materials And Methods

A hospital-based cross-sectional study was conducted by the Department of Otorhinolaryngology of a tertiary care teaching hospital, Sri Manakula Vinayagar Medical College and Hospital, Puducherry, in southern India. All the consenting hospital visitors (patients and bystanders), irrespective of their purpose of visit, above 18 years of age, of any gender, approaching the screening area of the hospital and clearing the screening process by hospital COVID-19 screening process were included in the study. Doctors and healthcare workers, patients with emergencies were excluded. The study was conducted for a duration of 2 months from 10<sup>th</sup> July-10<sup>th</sup> September 2020.

Data from 350 respondents was collected using a pre-designed, pre-tested questionnaire. The questionnaire contained questions on socio-demographic details like age, gender, education, occupation, presence or absence of ear complaints, past history of ear surgeries, family history of ear surgeries. The

questions on knowledge about various aspects of CSOM, especially cholesteatoma were compiled into 7 broad categories of meaningful and feasible knowledge domains as follows:

Cat.1- General perceptions about ear infections, Cat.2- Perceptions about Cholesteatoma, Cat.3- Knowledge about common ear symptoms, Cat.4- Knowledge about Less commonly reported symptoms, Cat.5- Knowledge about locoregional/Intratemporal complications. Cat.6- Knowledge about General body complaints/Intracranial complications. Cat.7- Harmful practices considered safe by respondents in CSOM patients.

The collected data by interviewers was entered digitally using EpiInfo7(version-7.2.2.6) software package. The analysis was done using SPSS version 24.0 analytical software.

## Results And Analysis

### Socio-demographic factors:

Out of 350 total respondents, 191(54.6%) were males and 159(45.5%) were females; 228(65.1%) belonged to rural areas, whereas 12(3.4%) belonged to urban areas; 173(49.4%) were unemployed and 177(50.6%) were employed. Majority of the study participants were Hindus 311(88.9%), whereas 21(6%) were Muslims, 18(5.1%) were Christians. Significantly large portion of the respondents belonged to Class 2 [112(32%)] and Class 3 [138(39.4%)] of B.G. Prasad Socioeconomic Classification. (Figure I &II)

Regarding education, more respondents were better educated [high school education 88 (25.1%), graduation/diploma 84(24%), higher secondary 65(18.6%) and middle school 59(16.9%)] than those who were less or not educated (Figure III).

Among 176 employed respondents, majority were coming under the categories of Skilled Labourers 58(32.9%), Professionals 35(19.9%), and Shop/business owner13(7.5%).(Figure IV).

The majority of the respondents [311(88.9%)] did not have any ear problems. Family members of 339(96.9%)] respondents did not have any history of ear surgeries. Past history of any ear surgery was not present in 337(96.3%) respondents.

### Category 1: General perceptions about ear infections: (Table I)

Among 350 respondents, relationship of bottle feeding to ear infections were disregarded by 232(66.3%) respondents and 258(73.7%) respondents did not consider smoking as one of the factors related to ear diseases. More than half of the respondents [188(53.7%)] felt that ear infections cannot occur in young children.

### Category 2: Perceptions of respondents about cholesteatoma: (Table II)

The majority of the respondents [230(65.7%)] were not aware of a disease like cholesteatoma with bone eroding properties occurring inside the ear, and [224(64%)] respondents opined that it cannot be present

inside the ear as a disease without any visible symptoms. While itching in the ear was identified by 219(62.6%)] respondents as a symptom of ear disease, giddiness was disregarded by majority of the respondents [228(65.1%)] as related to ear infections.

### **Category 3: Common symptoms of middle ear infections:**

The majority of respondents correctly identified common symptoms of ear infections like ear pain [326(93.1%)], ear discharge [324(92.6%)], hearing loss [308(88%)].

Ringing sensation in the ear was identified less frequently [239(68.3%)] by the respondents.

### **Category 4: Uncommon symptoms of middle ear infections:**

Itching in the ear was identified less frequently [219(62.6%)], as a symptom of middle ear infections. Giddiness was disregarded by the majority of the participants [228(65.1%)] as a symptom of ear infections.

### **Category 5: Knowledge regarding the intratemporal complications (Table III)**

A large number of respondents disregarded the possibility of spread of ear infections outside the ear - to the bone around the ear [175(50%)], to the nerve causing permanent hearing loss [152(43.4%)], to the neck causing neck swellings [197(56.3%)], to cause deviation of the angle of mouth [244(69.7%)], to cause eye problems like blurring of vision/ double vision [229(65.4%)], to cause severe giddiness [192(54.9%)].

### **Category 6: Knowledge regarding intracranial complications (Table IV)**

More than half of the respondents disregarded that general body symptoms could be related to complications of untreated ear infections; like difficulty in balance while walking or standing, weakness of limbs, etc. [219(62.6%)] fits/convulsions 260(74.3%), etc. A significant portion of respondents also didn't know that ear infections can spread to the inside of the skull[248(70.9%)], spread to the brain [235(67.1%)], complications can itself may lead to death [291(83.1%)].

### **Category 7: Harmful practices considered safe by respondents in CSOM patients: (Table V)**

Many harmful practices were considered safe for patients with ear infections by a large number of respondents like cleaning the ear with ear buds 168(48%), cleaning the ear with mineral (bottled) water 139(39.7%), Taking head bath as usual (without precautions) 133(38%), putting herbal medicines into the ear 124(35.4%), putting oil into the ear 121(34.6%), cleaning the ear with tap water 115(32.9%), swimming as usual (without precautions) 108(30.9%), getting the ear cleaned by other people 103(29.4%), Cleaning the ear with safety pins/ match sticks 99(28.3%), Self medication with any ear drops from local pharmacy 70(20%). (Figure V)

## **Compilation of various knowledge, attitude and practices related aspects into good and poor levels in each of the 7 categories. (Table VI)**

Among 350 respondents, majority exhibited poor level of knowledge/awareness about CSOM, especially Cholesteatoma; with regards to knowledge categories “Category 1 - “General perceptions about ear infections” [295(84.3%)]; “Category 2 - Perceptions about Cholesteatoma [246(70.3%)]; “Category 5- Knowledge about locoregional/Intratemporal complications [244(69.7%)]; “Category 6- Knowledge about General body complaints/ Intracranial complications [247(70.6%)]; “Category 7- Harmful practices considered safe by participants in CSOM patients”[279(79.7%)].

A good level of knowledge was exhibited by respondents for symptoms of CSOM only in two categories; “Category 3- Knowledge about common ear symptoms in CSOM”[313(89.4%)], and “Category 4- Knowledge about Less commonly reported symptoms of CSOM” [258(73.7%)].

## **Bivariate and multivariate analysis of the data: (Table VII)**

The bivariate analysis gave rise to the following significant findings:

- a. Those respondents with education of middle school and below were 2.03 times more prone for having less overall knowledge on ear disease related factors (this association was also statistically significant ( $p < 0.05$ ) than those with higher education. In contrary to the applied assumption, those with unskilled jobs or no occupation were less likely ( $OR = 0.56$ ) to have poor overall ear disease knowledge than those with skilled or professional jobs (and this was also statistically significant).j
- b. Those with no history of ear surgeries were found to be 1.68 times more likely to have less knowledge on ear disease than those who have had ear surgeries, but this was not statistically significant ( $p > 0.05$ ) and more over, the confidence interval of ODDS ratio included zero also.

The Multivariate analysis:

The Multivariate analysis (where the possible confounding factors were adjusted for) of same sociodemographic and ear disease related history with overall knowledge on ear disease gave rise to two interesting findings:

- a. Those with less education were found to be less likely ( $OR = 0.49$ ) to have poor knowledge on ear disease and was statistically significant, this is in contrary to applied assumption and to the findings of bivariate analysis. Similarly the finding of bivariate analysis that unskilled and unemployed being protected from less knowledge on ear disease was proved wrong in multivariate analysis; where they were found to be 1.76 times more likely to have poor ear disease knowledge than those who are skilled or professionals and this finding was statistically significant.
- b. Those from rural area and those without any history of ear disease were found to be 1.69 and 1.35 times more likely to have less ear disease knowledge than their counterparts, but these associations were

not statistically significant ( $p>0.05$ ) and more over, the confidence interval of ODDS ratio included zero also.

## Discussion

A study done to investigate maternal knowledge and attitudes about otitis media (OM) risk, observed that mothers were more knowledgeable about OM signs and symptoms than about risk factors. This study included only mothers of young children.<sup>6</sup> In another study done to assess the causes of delayed care-seeking for CSOM in Nigeria observed that, the majority of patients with delayed care-seeking were young adult patients. They concluded that low knowledge concerning this disease (90.7%) significantly contributes to delayed care-seeking.<sup>7</sup>

Our study included hospital visitors of both genders, above 18 years of age. . Vast majority (89.4%) of the respondents were having “good” knowledge about the common symptoms of CSOM, but there was “poor” knowledge on the intratemporal (69.7%) and intracranial complications (70.6%).

A study on caregivers of young children (6-36 months old) in semi-urban and urban areas, noted that both populations demonstrated knowledge deficits regarding risk factors associated with OM and both populations exhibited a willingness to modify behaviours to reduce risk.<sup>8</sup> Studies have noted that CSOM leading to complications is more observed in males, younger age groups. Rural and illiterate patients have a higher risk of developing complications.<sup>9</sup> In our study, majority of respondents i.e. 228(65.1%), belonged to rural areas. As per the multivariate analysis, those from rural area and those without any history of ear disease were found to be 1.69 and 1.35 times more likely to have less ear disease knowledge than their counterparts, but these associations were not statistically significant ( $p>0.05$ ) and more over, the confidence interval of ODDS ratio included zero also. This is consistent with various studies on determinants of health issues related knowledge, attitudes and practices where people from rural areas were found to be more prone for lesser levels of knowledge on diseases.<sup>10,11</sup>

In a study done in rural India, it was noted that socio-demographic factors as well as poor knowledge and attitudes and unhealthy practices with respect to risk factors of otitis media contribute to the high prevalence of otitis media. However, this study addressed only the risk factors for Otitis media in children. It did not include the assessment of knowledge about cholesteatoma and its complications.<sup>12</sup>

In our study, which only explored the knowledge levels of people in ear disease related issues and not the prevalence of ear disease, on contrary to our assumption, those with less education were found to be less likely to have poor knowledge of ear diseases; in other words higher educational level was found to be a determinant of lesser knowledge on ear disease. This might be against the prevailing popular as well as scientific evidence but the finding in our study was statistically significant. Multivariate analysis had shown that those with unskilled jobs or no occupation were more likely (OR = 1.766) to have poor overall ear disease knowledge than those with skilled or professional jobs (and this was also statistically

significant). This is consistent to the existing evidence that skilled workers and professionals are more likely to have good knowledge in health related issues.<sup>13</sup>

Those from the rural area and those without any history of ear disease were found to be 1.69 and 1.35 times more likely to have less ear disease knowledge than their counterparts, but these associations were not statistically significant ( $p>0.05$ ) and moreover, the confidence interval of ODDS ratio included zero also.

Another study done on the admitted patients with complications of CSOM observed that intratemporal complications were seen in 88.46% of the patients while 11.53% had intracranial complications. Overall awareness was poor.<sup>14</sup> This study included only the admitted patients with CSOM complications and awareness among the general population may be poorer.

According to some studies, only 44.7% of CSOM patients were aware that surgery can cure the CSOM. Early surgery was said to be beneficial by 25.3% patients.<sup>15,16</sup> In our study, a large number of the respondents were aware of the treatment options available for ear infections like ear drops (90%), tablets (79.1%), surgeries (68.6%).

In a study from a rural area of Nepal, 14.7% relied on household remedies like oil, herbs instilled into the ears and 2.94% would go to faith healer. Use of antibiotics was perceived as the sole method to treat otitis media by 75.5% of the attendants.<sup>17</sup> In our study, a large number of respondents considered many harmful practices as safe for patients with ear infections like cleaning the ear with ear buds (48%), cleaning the ear with mineral (bottled) water (39.7%), Taking head bath as usual (without precautions) (38%), putting herbal medicines into the ear (35.4%), putting oil into the ear (34.6%), cleaning the ear with tap water (32.9%), swimming as usual (without precautions) (30.9%), getting the ear cleaned by other people (29.4%), Cleaning the ear with safety pins/ match sticks (28.3%), Self-medication with any ear drops from local pharmacy (20%).

In India, there is a national program for the prevention and control of deafness, which aims at early identification, diagnosis and treatment of ear problems responsible for hearing loss and deafness.<sup>18</sup> This mainly focuses on the causes of deafness and its prevention, treatment and rehabilitation. Our study points towards the need to address the various factors in the national program like to create awareness about insidious nature, lack of symptoms and signs in cholesteatoma, which can lead to delayed diagnosis and poor outcomes in terms of hearing ability.

Further research studies are needed including a larger sample size or community based designs to further establish the relationship between various socio demographic variables and knowledge domains regarding cholesteatoma.



Hence, even though the primary focus of the current world will be to combat the COVID-19 pandemic, the implications of delayed diagnosis and management of chronic diseases like CSOM/cholesteatoma should also be kept under vigilance to prevent complications. This study also points towards various factors which need to be kept in mind while creating public awareness programs regarding CSOM and its complications.

## Conclusions

This study provides an insight into the lack of awareness about ear disease related etiology, risk factors, symptoms, harmful habits, complications and misconceptions; especially regarding CSOM; more specifically related to cholesteatoma and its complications among general population, especially rural and even in well educated populations. Given its high prevalence, lack of symptoms, delayed care-seeking, high chances for complications, and limited availability of resources, there is an urgent need for public health measures to create awareness among the general population regarding cholesteatoma and its complications, to prevent a potential increase in the incidence of complications, especially during and post COVID-19 pandemic.

## Declarations

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### Conflicts of interest:

The authors declare that there are no conflicts of interest.

### Ethical Standards:

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional guidelines on human experimentation (SMVMCH-EC no. 43/2020) (Human Studies), Sri Manakula Vinyagar Medical College and Hospital Puducherry and with the Helsinki Declaration of 1975, as revised in 2008.

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## Tables

**Table I: Category 1: General perception of participants about ear infections. (n=350)**

Cat 1. General perceptions about ear infections	No	Yes
	Frequency(%)	Frequency(%)
1. Is Bottle feeding in children related to ear infections?	232(66.3%)	118(33.7%)
2. Is Smoking related to ear diseases?	258(73.7%)	92(26.3%)
3. Are Nose and throat conditions related to ear infections?	116(33.1%)	234(66.9%)
4. Is Ear infection, a disease of only poor people?	241(68.9%)	109(31.1%)
5. Can ear discharge be caused by a hole in the eardrum?	117(33.4%)	233(66.6%)
6. Can using of some ear drops cause damage to the ear?	194(55.4%)	156(44.6%)
7. Can Ear infections be present in young children also?	188(53.7%)	162(46.3%)

**Table II. Category 2: Perception of respondents about cholesteatoma in the ear (n=350)**

Cat 2. Perceptions of respondents about cholesteatoma	No Frequency (%)	Yes Frequency (%)
1. Can bone damaging disease occur inside the ear?	230(65.7%)	120(34.3%)
2. Is Eardrum disease with ear discharge is more serious than without discharge?	174(49.7%)	176(50.3%)
3. Can the bone damaging disease be present inside the ear without any symptoms?	224(64%)	126(36%)
4. Does the stoppage of ear discharge always indicate the cure of ear disease?	186(53.1%)	164(46.9%)

**Table III: Category 5- Knowledge about locoregional spread/Intratemporal complications (n=350).**

Cat 5.Where do you think Ear infection can spread to?	No Frequency (%)	Yes Frequency (%)
1. Bones around the ear	175(50%)	175(50%)
2. To nerve causing permanent hearing loss	152(43.4%)	198(56.6%)
3. To neck causing neck swelling	197(56.3%)	153(43.7%)
4. Deviation of the angle of mouth to one side	244(69.7%)	106(30.3%)
5. Eye problems like blurring of vision/ double vision	229(65.4%)	121(34.6%)
6. Giddiness	192(54.9%)	158(45.1%)

**Table IV: Category 6- Knowledge about systemic complaints/ Intracranial complications**

Cat 6. According to you, Untreated ear infection can cause which symptoms in the body?	No Frequency (%)	Yes Frequency (%)
1. Fever with chills and rigors	115(32.9%)	235(67.1%)
2. Vomiting	139(39.7%)	211(60.3%)
3. Headache	93(26.6%)	257(73.4%)
4. Difficulty in balance while walking or standing, weakness of limbs	219(62.6%)	131(37.4%)
5. Spread inside skull	248(70.9%)	102(29.1%)
6. Spread to the brain	235(67.1%)	115(32.9%)
7. Fits/ convulsions	260(74.3%)	90(25.7%)
8. Potential to cause death	291(83.1%)	59(16.9%)

**Table V: Harmful practices considered safe by the respondents in CSOM patients:**

Cat7: Which of the following practices, do you think, can be done safely if a person is having ear infections	No Frequency (%)	Yes Frequency (%)
1. Taking head bath as usual(without precautions)	217(62%)	133(38%)
2. swimming as usual (without precautions)	242(69.1%)	108(30.9%)
3. Cleaning the ear with ear buds	182(52%)	168(48%)
4. Cleaning the ear with safety pins/ match sticks	251(71.7%)	99(28.3%)
5. getting the ear cleaned by other people	247(70.6%)	103(29.4%)
6. cleaning the ear with tap water	235(67.1%)	115(32.9%)
7. Cleaning the ear with mineral (bottled) water	211(60.3%)	139(39.7%)
8. putting herbal medicines into the ear	226(64.6%)	124(35.4%)
9. putting oil into the ear	229(65.4%)	121(34.6%)
10. Self medication with any ear drops from local pharmacy	280(80%)	70(20%)

**Table VI: Compilation of the knowledge levels of respondents into good and poor levels in each categories.** Good level- equal to or more than 40% of correct responses, Poor level- Less than 40% correct responses.

Knowledge Attitude and Practices (KAP) score categories.(n=350)	Median (min-max) score	Level of Knowledge (n=350)	
		Good	Poor
Cat.1- General perceptions about ear infections	3(0-7)	55(15.7%)	295(84.3%)
Cat.2- Perceptions about Cholesteatoma	2(0-4)	104(29.7%)	246(70.3%)
Cat.3- Knowledge about common ear symptoms in CSOM	4(0-4)	313(89.4%)	37(10.6%)
Cat.4- Knowledge about Less commonly reported symptoms	1(0-2)	258(73.7%)	92(26.3%)
Cat.5- Knowledge about locoregional spread/ Intratemporal complications	3(0-6)	106(30.3%)	244(69.7%)
Cat.6- Knowledge about systemic symptoms/ Intracranial complications	3(0-8)	103(29.45%)	247(70.6%)
Cat.7- Harmful practices considered safe by respondents in CSOM patients.	3(0-10)	71(20.3%)	279(79.7%)

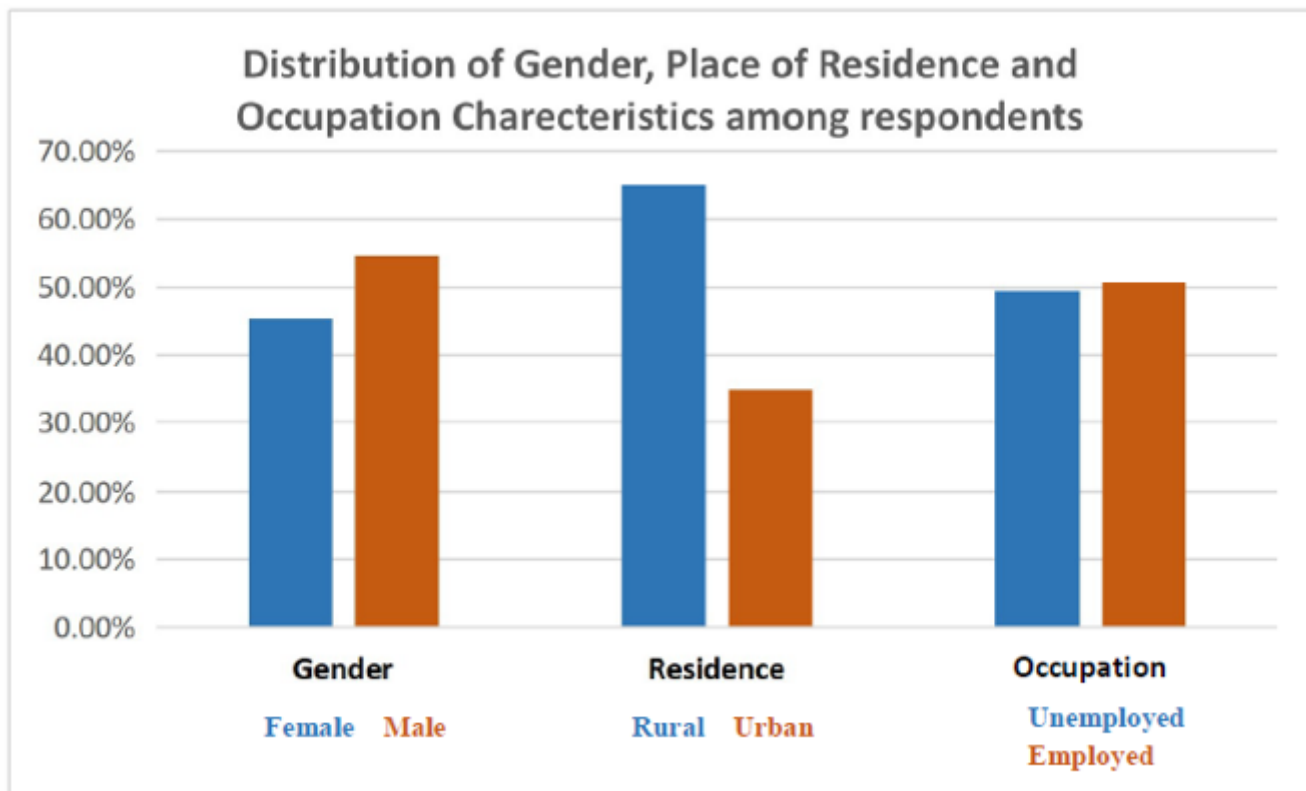
**Table VII: Bivariate and Multivariate Analysis of socio-demographic factors with Overall knowledge on middle ear infections:**

Variables	Overall Knowledge on middle Ear infections		Bivariate analysis		Multivariate analysis	
	Good	Poor	Reference category	p-value	Reference category	p-value
	n(%) n=249	n(%) n=101	Odds ratio(95% CI)		Adjusted odds ratio (95% CI)	
<b>Age category</b>						
45 years and above	62	28	1	0.961	1	0.961
Less than 45 years	187	73	0.986 (0.570 - 1.708)		1.014 (0.585 - 1.756)	
<b>Gender</b>						
Female	109	50	1	0.247	1	0.247
Male	140	51	0.745 (0.453 - 1.226)		1.342 (0.816 - 2.207)	
<b>Education Level</b>						
High school and above	179	58	1	0.009*	1	0.009*
Middle school and below	70	43	2.036 (1.190 - 3.483)		0.491 (0.287 - 0.840)	
<b>Occupation</b>						
Professional/Skilled/Business	72	34	1	0.048*	1	0.048*
Others and unemployed	177	67	0.566 (0.323 - 0.994)		1.766 (1.006 - 3.100)	
<b>SES</b>						
Middle and Upper Classes	151	61	1	0.916	1	0.289
Lower class	98	40	0.974 (0.595 - 1.593)		0.42 (0.084 - 2.091)	

Residential Area						
Urban	96	26	1	0.053	1	0.053
Rural	153	75	0.591 (0.346 - 1.008)		1.693 (0.992 - 2.888)	
Presence of ear disease						
Yes	30	9	1	0.468	1	0.468
No	219	92	0.741 (0.329 - 1.667)		1.350 (0.600 - 3.039)	
Past history of ear surgeries						
Yes	7	4	1		1	
No	242	97	1.685 (0.451 - 6.293)	0.438	0.594 (0.159 - 2.218)	0.438

## Figures





**Figure 1**

Distribution of gender, place of residence and occupation among respondents.

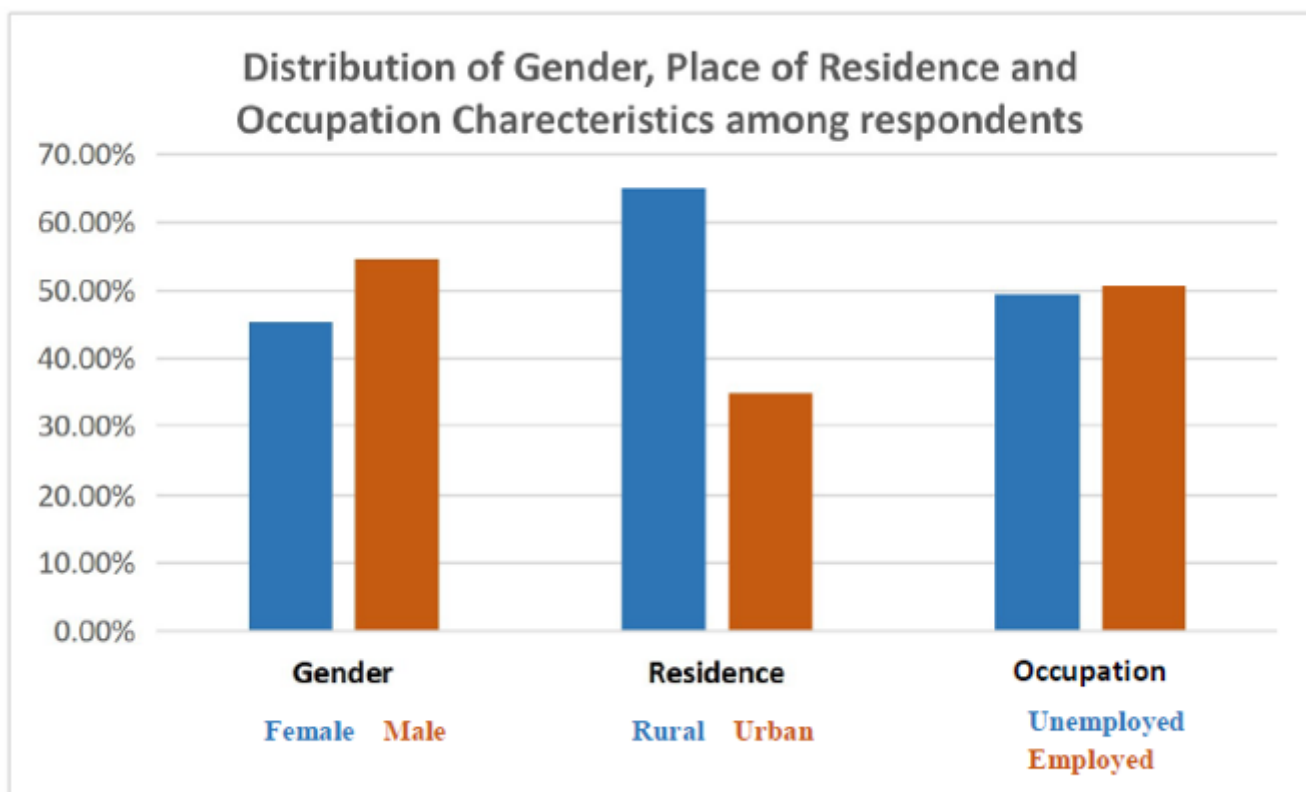


Figure 1

Distribution of gender, place of residence and occupation among respondents.

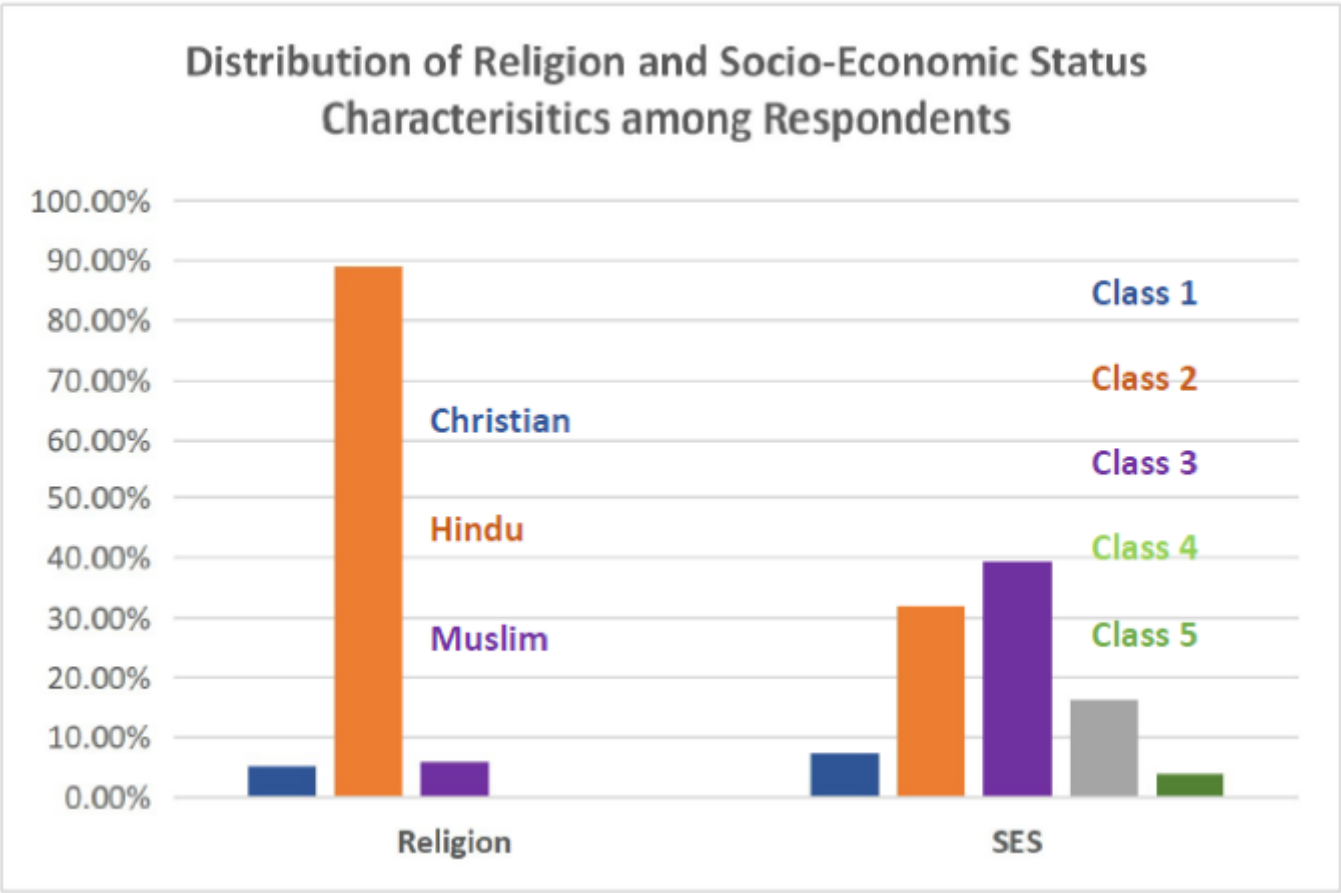
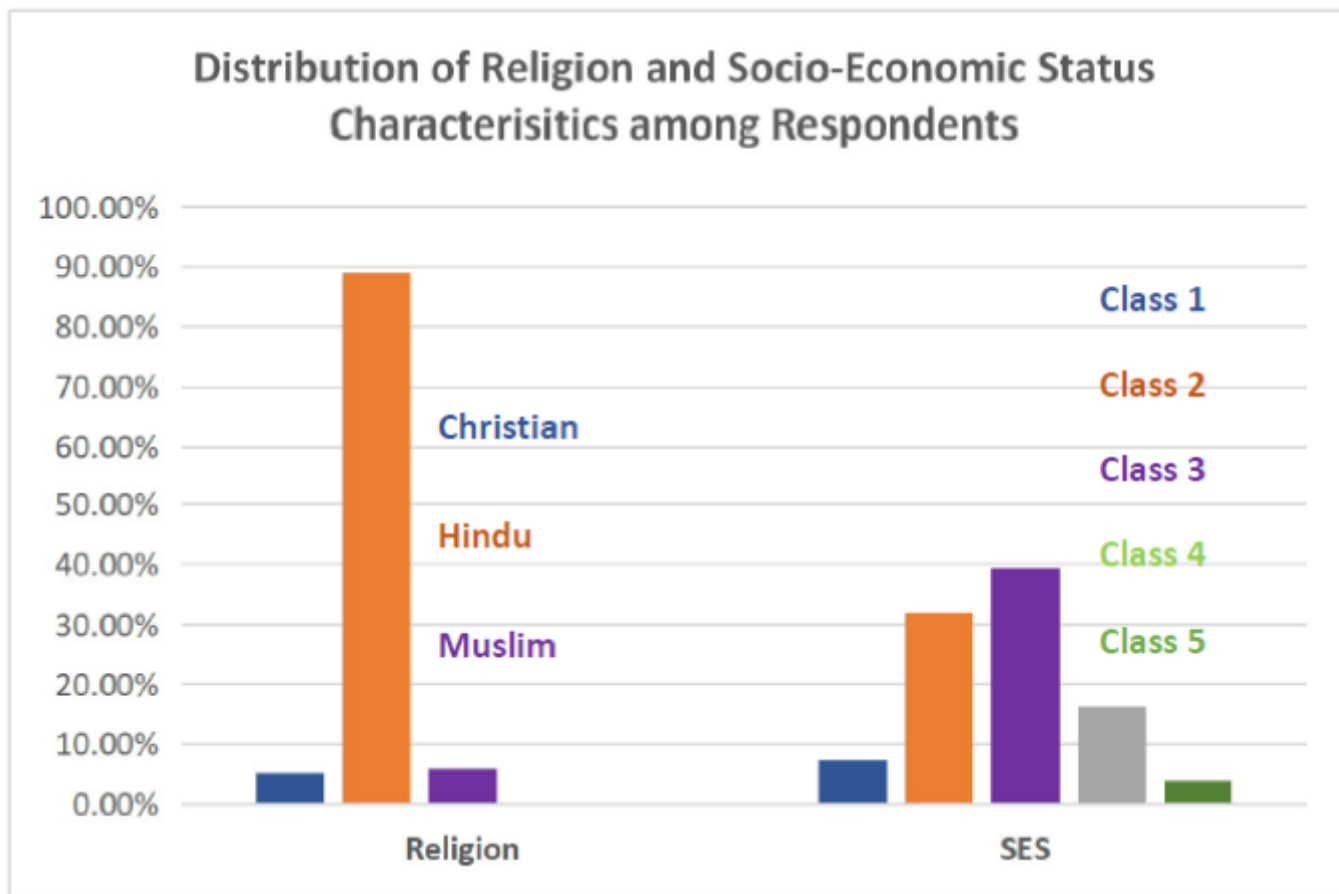


Figure 2

Distribution of religion and Socioeconomic status among respondents:



**Figure 2**

Distribution of religion and Socioeconomic status among respondents:

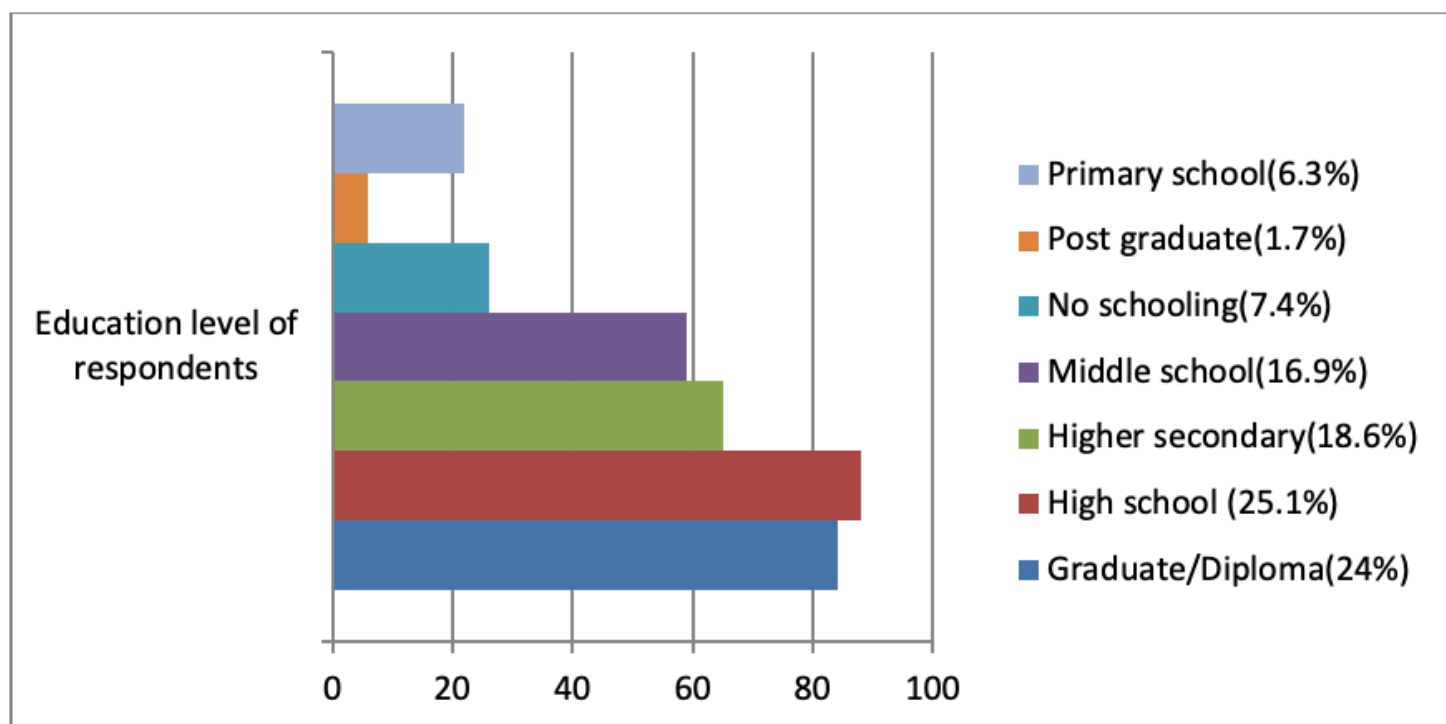


Figure 3

Distribution of respondents based on education level.

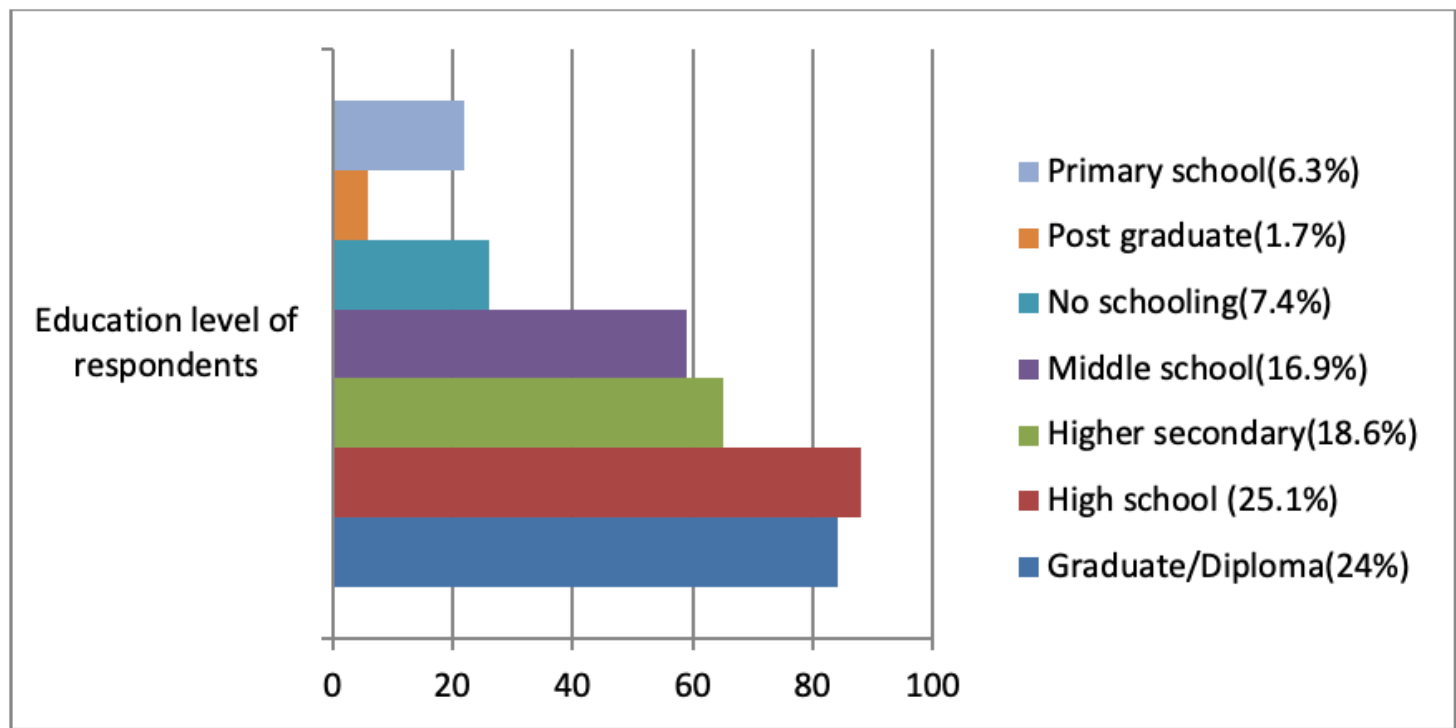
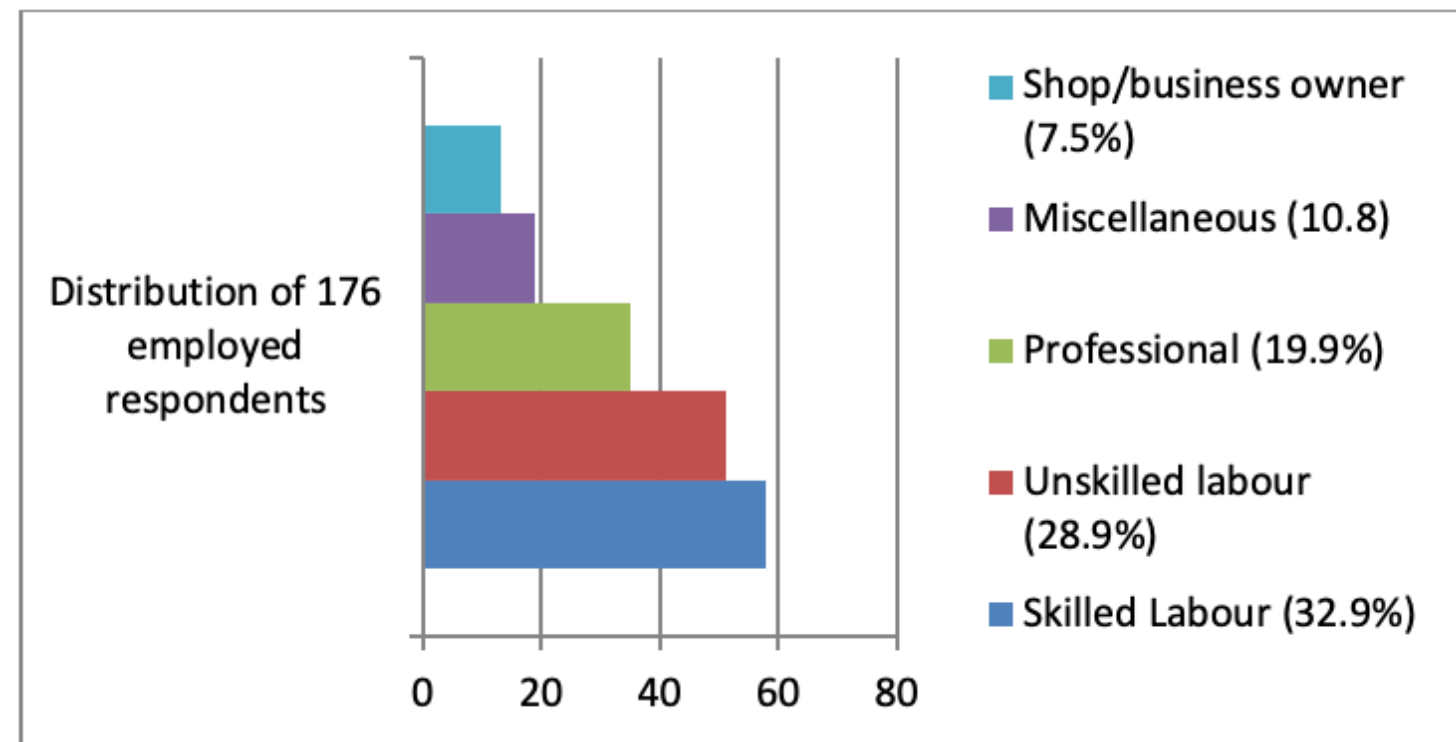


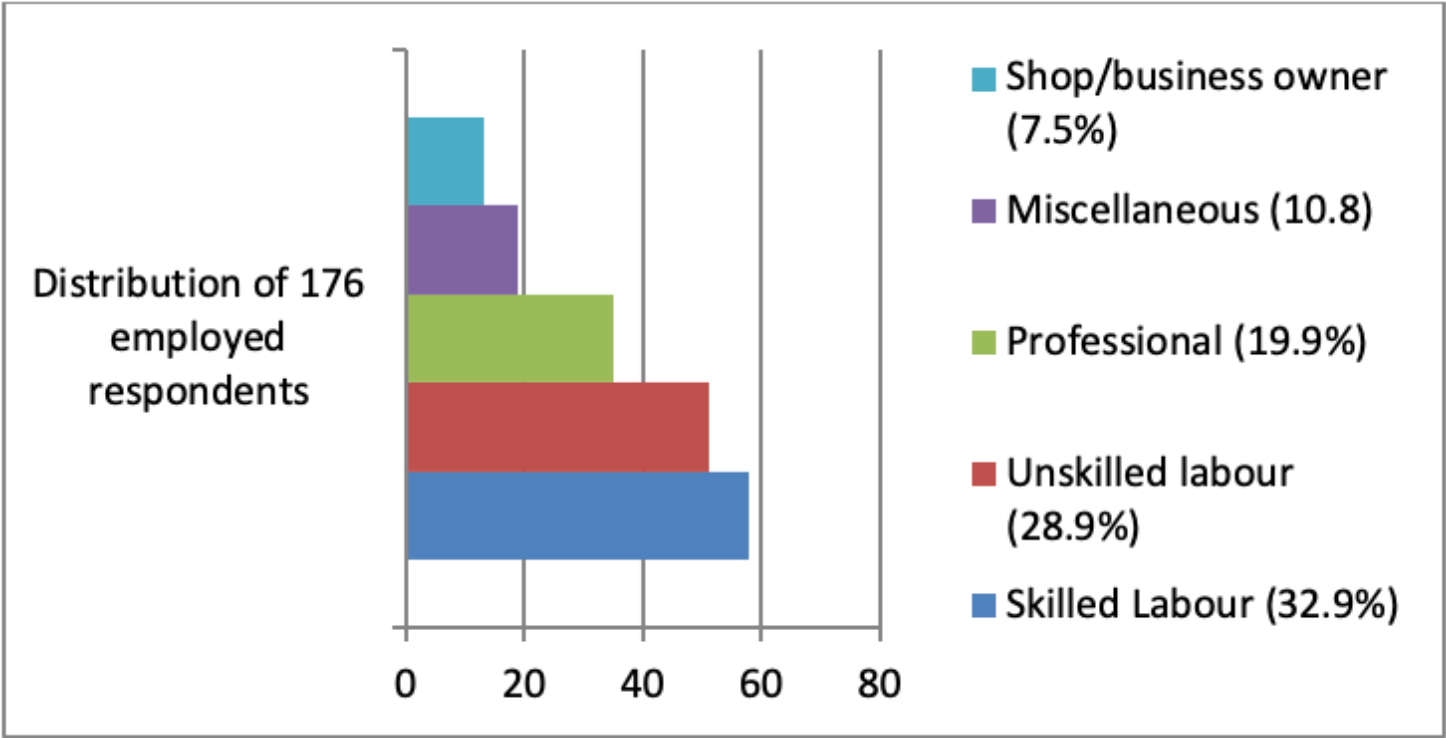
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Distribution of respondents based on education level.



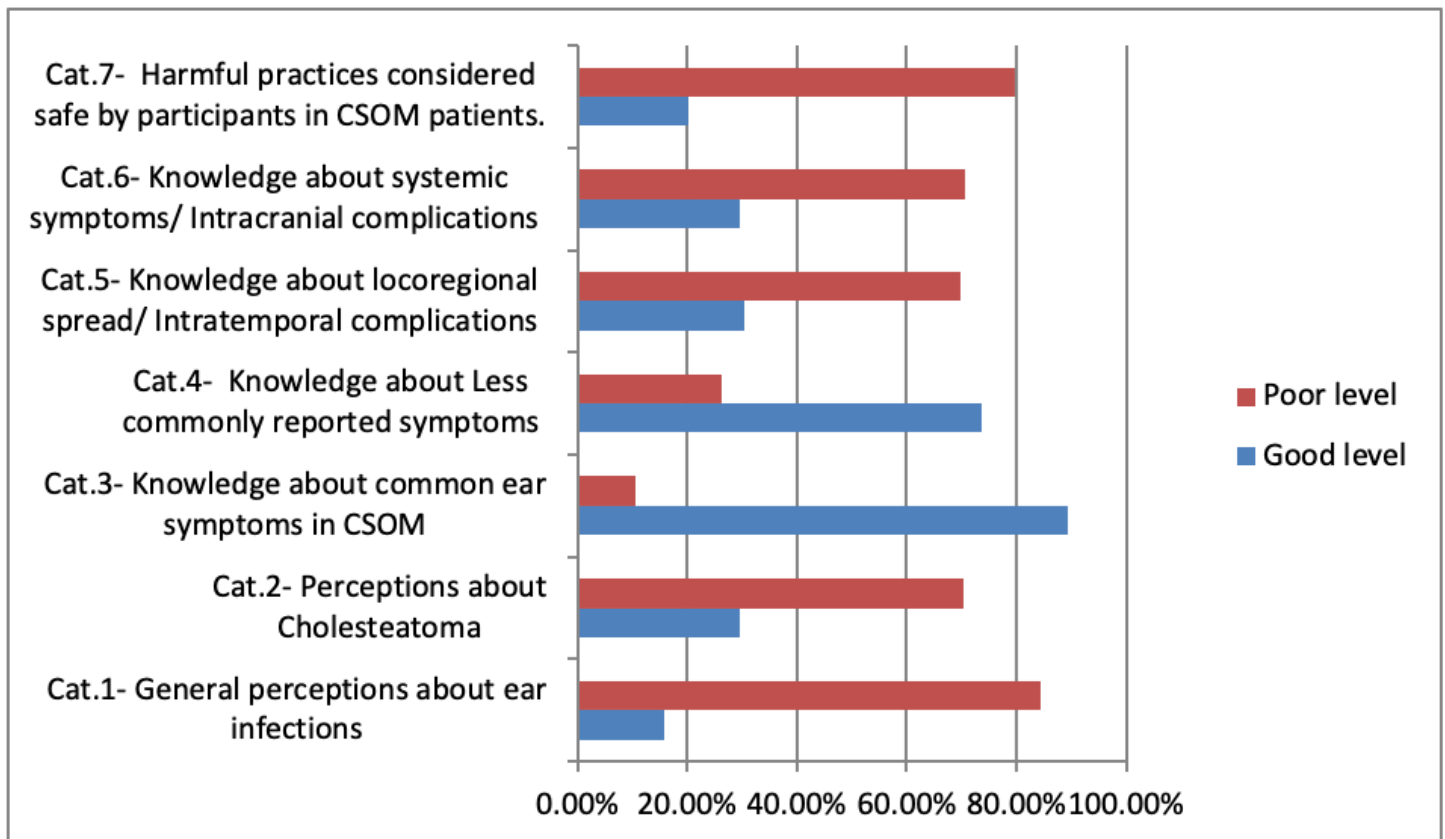
**Figure 4**

Distribution of respondents based on employment categories (n=176 employed respondents)



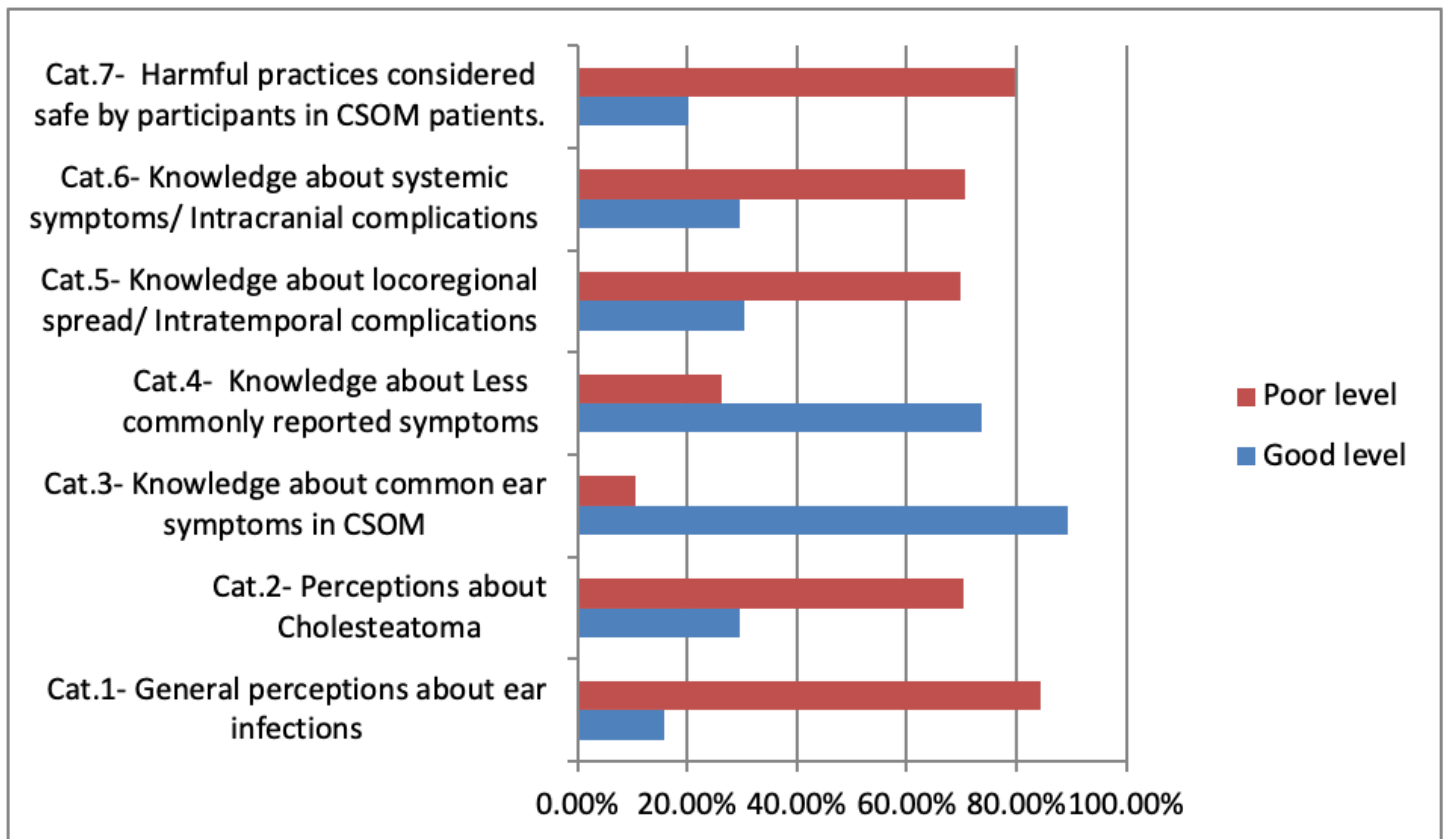
**Figure 4**

Distribution of respondents based on employment categories (n=176 employed respondents)



**Figure 5**

Levels of knowledge of respondents on various aspects of CSOM, especially cholesteatoma.



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Levels of knowledge of respondents on various aspects of CSOM, especially cholesteatoma.