



Socio Demographic Profile Of COVID 19 Patients Tested At Bowring And Lady Curzon Hospital , Bengaluru

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Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Novel Coronavirus-disease-2019 (Covid-19) caused by the Severe-Acute-Respiratory-Syndrome Coronavirus-2 (SARS-CoV-2) showed a rapid spread all over the world. It's still an ongoing pandemic with greater morbidity and mortality. In the present study, we describe the positivity rate and demographics for nasopharyngeal samples presented to our tertiary care center for Covid-19 testing. Analytical cross-sectional study was carried out from June 2020 to Jan 2021. Samples received from COVID 19 suspects and contacts were included in the study. Out of 101004 samples, 6931 samples were from clinically symptomatic individuals constituting 6.86% and 94073 [93.14 %]. were from asymptomatic individuals. Out of 101004 samples tested, 3206 [3.17%] tested positive by RTPCR. It has also been observed that the rate of positivity was highest in the month of July 2020 with 17.03% (572/3358) followed by June 2020 where it was 14.56% (221/1517) and 12.95 % (726/5605) in August 2020. Age of the people from whom sample was received ranged from 0 to 90yrs. Mean age was 45 yrs. Among the total positive samples, when analysed showed a male preponderance ranging from 53% to 66% compared to females which was from 34% to 47%.

Keywords: Covid-19, SARS-CoV-2, Pandemic, Asymptomatic, Cross sectional

Introduction

COVID -19 is a disease caused by severe acute respiratory syndrome coronavirus2 (SARS-CoV-2) virus, with rapid spread across globe leading to pandemics.⁽¹⁾ According to the World Health Organization (WHO), more than 167 countries/territories have confirmed cases (WHO, 2020) associated with rapid transmission rate and relatively high mortality. ⁽²⁾ Though the pandemic is starting to tip off as a plateau, new case spikes seem to be reported from clusters across the state. In local areas, discrimination of patients affected by covid-19

causing stress, fear/anxiety of covid-19 spread has been sporadically reported. Government machinery has spread awareness on covid-19 with droplet-transmission being determined as the primary route of spread.⁽³⁾

Human-to-human transmission via droplets as well as through contact with fomites seems to be the important route of the virus spread. Since about 80% of the infected population are either asymptomatic or have mild disease, people have been going to their workplaces and even traveling internationally. Nevertheless, even though the virus is causing mild

disease in many, the course of illness may be severe, leading to hospitalization and even death in elderly or those with comorbid conditions^[4] Nevertheless, the spread of the disease needs to be studied in order to decide on the effective controlling policy. Better understanding of COVID-19 is possible from disease surveillance and epidemiologic studies, many such studies were undertaken during the early phases of the pandemic in China⁽⁴⁾ and in the countries of Europe and North America.⁽⁵⁾ There is a need for similar studies in our geographic and demographic population. In India, surveillance of COVID-19 was initiated with airport screening for severe acute respiratory infection, mainly for travelers from China. Nationwide testing was earlier done mainly for symptomatic individuals with history of travel or contact with a confirmed COVID-19 case within the previous 14 days, and was expanded to include all symptomatic individuals and asymptomatic contacts of confirmed cases in states between 20th and 28th March 2020. This situation could possibly expose any pre-existing/sub-clinical mental disorders due to fear of the disease and become a social issue as mental health research is evolving in current emergent situation. Most of these studies were published by China, United States and Europe. We describe demographics and positivity rate of covid-19 disease for samples received from various regions across Karnataka at our tertiary care center. Although multiple modeling studies have sought to assess how COVID-19 might affect individuals and communities, no model has given conclusive predictive projection.⁽⁶⁾ In model studies to be effective, it needs to provide good prevalence data for different geographic regions and among various demographic populations over time.⁽⁷⁾

Hence, we intended to do a cross sectional study using the data generated in our COVID-19 RT-PCR testing laboratory and analyze the data under various parameters, describing the places where the swab collection were done, the distribution of positive samples, the dynamics of positivity over times, gender difference, distribution among various age groups

Aims Of Study: [Objectives]

The present study was undertaken

1. To estimate the positivity rate of COVID 19 cases among the samples tested by RT PCR.

2. To study the socio-demographic profile of COVID 19 confirmed cases like age, gender, and geographic distribution.

Materials and Methods:

It is a cross-sectional analytical study, conducted at RT PCR laboratory of Microbiology department, Bowring and Lady Curzon Medical college, Bengaluru. The data of samples tested between June 2020 to Jan 2021 were taken and analysed. This study was approved by the Institutional Ethical Committee [IEC NO: BLCMRI/IEC/RP/037/2021-22]

All the consecutive samples were included in the study by convenient sampling technique. Nasopharyngeal and oropharyngeal swabs were collected at covid-19 kiosk as per ICMR guidelines^[8]

Sample Type: Nasopharyngeal & oropharyngeal swabs^[8] collected from Bengaluru Urban, Bengaluru rural, and from around 27 districts across Karnataka and few other states.

Procedure:^[9]

RT - PCR procedure:

Nasopharyngeal & oropharyngeal swabs received were subjected for the RT PCR test. Meril COVID 19 One step RT PCR kit was used. The tests were performed as per manufacturer instructions and conditions, as below

1. Samples were treated with lysis buffer
2. Automated extraction of RNA was done
3. Samples were mixed with PCR master mix and subjected to PCR machines like
4. Bio-rad, Quant studio, and Roto gene
5. Later analysis of results were done and results were interpreted as per ICMR guidelines
6. If any delay in extraction expected, samples were stored at -70°C or lower.

Inclusion and Exclusion Criteria:

Inclusion Criteria: All nasopharyngeal & oropharyngeal swabs sent in viral transport media, taken from COVID-19 suspected cases and contacts submitted from various places were included in study.

Exclusion Criteria:

Spilled samples, unlabelled and improperly labelled samples, duplicate / follow up samples, inadequate samples.

Results and Discussion:

This is a cross-sectional analytical study, conducted at RT PCR laboratory Microbiology department, Bowring and Lady Curzon Medical college, Bengaluru. The data of samples tested between June 2020 to Jan 2021 were taken and analysed.

All the consecutive samples received at testing centre were included based on those fulfilling sample acceptance/eligibility criteria and were tested. A total of 1,01,004 Nasopharyngeal and oropharyngeal swabs were submitted for RT PCR testing as per ICMR guidelines during the study period.

Out of 101004 samples, 6931 samples were from clinically symptomatic individuals constituting 6.86% and 94073 were from asymptomatic individuals [fig. 1] who could be contacts or others forming about 93.14%. Patients' symptomatology at initial presentation were throat pain, drycough, fever, loss of smell and taste, abdominal pain, diarrhea and breathlessness, headache and nasal blockage.

As the pandemic started sample size also raised from 1517 in June 2020 to a 24,333 in January 2021 with steady increase in sample size due to increase in testing and tracing protocols. Majority of the samples were received during January 2021 about 24,333 (24.09%) followed by 21,110 (20.90%) in December and 16480 (16.32%) in November. The total samples received and results of RT PCR for COVID 19 are tabulated month wise in the following table 1. A total of 3206 positive tests were identified out of 101004 samples tested during the study period accounting for 3.07%. It has also been observed that the rate of positivity was highest in the month of July 2020 with 17.03% (572/3358) followed by June 2020 where it was 14.56% (221/1517) and 12.95% (726/5605) in August 2020. (table . 1) The pandemic was peak in India in these three months, in the present study positivity rate ranged between 12.95% to 17.03%. The positivity rate slowly declined from 7.03% (583/8275) in the month of September 2020 to 0.59% (126/24333) during January 2021.

Among the total positive samples, when analysed showed a male preponderance ranging from 53% to 66% compared to females which was from 34% to

47%. The rate of positivity which was more among the men in initial periods of pandemic stood same even in later months. But the rates among women slowly increased to a maximum of 47%.

Of the total 101004 samples tested, 3206 (3.17%) were positive for COVID 19. Samples for RTPCR were collected across 27 districts of Karnataka. A total of 21,813 were received from Bangalore urban constituting 21.60% of total samples tested and 11388 (11.27%) from Bangalore rural and rest 67,730 (67.05%) from other districts of Karnataka. About 73 samples [0.07%] belonged to people from other states

The regions under Bangalore rural included Devanahalli, Doddaballapura, nelamangala. The other districts which sent the samples were Chikballapur, Chikkamagalur, Gadag, Kolar, Mandya, Mysore, Ramnagar, Shivnagar, Tumkur, Ballari, Bidar, Davangere, Kalburgi, Raichur, Bagalkote, Belgavi, Chitradurga, Dharwad, Haveri, Dakshinakannada and kodagu, Chamrajnagar, Hassan, Koppal, Udupi, Vijayapura, Uttarakannada. Even though the frequency of positivity is only 3.17%, there is wide variation among different geographical distribution. Rate of positivity was 9.53% in Bangalore urban and 1.54% in Bangalore rural. However it was just 1.54% among other districts though majority of samples was received from other districts [n= 67730, 67.05%]. The evolution of positivity varied among different geographic areas. Highest positivity found in Bangalore urban was during August 576 (27.70%) and 502 (24.14%) in July and least in January 49 (2.35%). However in other districts it remained less but at its peak in October 374 (35.86%) and September 175 (16.78%) and lowest of 35 (3.55%) in January 2021. Where as in Bangalore rural peak was in November and December with 29 (0.25%) & 24 (0.21%) respectively and no cases in June

Age wise distribution of positivity more common among age group 19-40 yrs [n= 1415, 44.14%] followed by those between 41 to 60 yrs [n = 1069, 33.34%]. However it was least common of 8.95% [n= 285] and 13.5% [n= 435] among less than 18 yrs and more than 60 yrs respectively.

Discussion :

The COVID-19 pandemic has now risen to a global health crisis across the globe. This novel virus outbreak has challenged India's economic, medical and public health infrastructure.¹⁰ Unprecedented Covid-19 pandemic has been a medical/logistical nightmare and has taken a significant toll across all sectors globally.³ Awareness on Covid-19 and prevention of spread of misinformation are the keystones. Samples for RTPCR were collected across 27 districts of Karnataka. In the present study, about 6.86% (6931) samples were from clinically symptomatic individuals and 93.14% (94073) were from asymptomatic individuals who could be contacts or others. In the present Geographical distribution, a study by Kumar N et al¹² at NIMHANS in the initial phase between March 8 to May 31 2020 have found amongst 3404 COVID 19 positive cases, 3096 (91%) asymptomatic and 308(9%) were symptomatic. The overall rate of positivity during the study period was 3.07% (3206 out of 101004) and it has also been observed that the rate of positivity was highest in the month of July 2020 with 17.03% (572/3358) followed by June 2020 where it was 14.56% (221/1517) and 12.95 % (726/5605) in August 2020. (table2) The pandemic was peak in India in these three months, in the present study positivity rate ranged between 12.95% to 17.03%. In a study by Goel et al reported positivity rate of 7.6% (201/2592), which was almost double. This could be because the study population were subjects who presented to hospital with either mild flu-like symptoms or with suspected exposure to a confirmed case of COVID-19 during the early phases of the pandemic. The test positivity rate of 7.6% represents the early phase of the pandemic in India and is also a marker of the prompt availability of free testing facilities and active surveillance by the government.

There was a male preponderance of 58% (1867/3206) compared to females of 42% (1339/3206) for Covid 19 positivity. This can be explained due to active exposure of males when they go out to work. In the initial June month male preponderance was of 66%, which slowly reduced to 54% in January 2021. However rate of positivity among females raised from 34% in June 2020 to 47% in November 2020, there on remained almost in same range. This indicates the steady spread even among females and in India an indicator of community spread. Almost

similar findings were also noted by K. Revathishree¹ and Gupta et al.^{3,13,14} Mazumder A et al¹⁵ during lockdown have found RT PCR positivity among males of about 33.68 % and 23.60 % among individuals aged between 20-39 years and 40-59 years respectively.

However positivity among those less than 20 years was 5.68% and 0.60% for elderly aged more than 80 years. They also noted RTPCR positivity among females to be 9.47 % and 7.41 % among individuals aged between 20-39 years and 40-59 years. Positivity among those less than 20 years was 3.70% and 0.43% for elderly aged more than 80 years. These could be because of strict lock down effects and reverse isolation.

In the present Geographical distribution, a study by Kumar N et al¹² have also found similar male preponderance. Even though the frequency of positivity was only 3.17%, there was a wide variation among different geographical distribution. Highest positivity found in Bangalore urban was during August 576 (27.70%) and 502 (24.14%) in July and least in January 49 (2.35%). However in other districts it remained less but at its peak in October 374(35.86%) and September 175 (16.78%) and lowest of 35 (3.55%) in January 2021. Where as in Bangalore rural, peak was in November and December with 29(0.25%) & 24 (0.21%) respectively. This indicates a slow and study spread of Covid from cities to rural area which was mainly because of migration of people from cities to their native and not following lock down guidelines leading to spread.

The COVID-19 patients in India are younger as compared to their Western counterparts. Male preponderance has been seen. The proportion of asymptomatic individuals seems to be substantial. Migration of workers during lockdown period from Bangalore leading to spread to rural neighbouring areas.

Conclusion

Our study was done with a purpose of throwing light on covid positivity rate and sociodemographic factors as age, sex, geographic and monthwise distribution. Our study correlated with ICMR data and studies done at other centres. Since there are very limited number of such studies, it will be helpful in guiding for

more surveillance testing and containment measures to be taken.

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Table 1: Month Wise Distribution Of Samples Received And Positivity Rate

Month	Total samples received	Percentage of total samples received	Total Positive samples	Percentage of positive samples
June-20	1517	1.50%	221	14.56 %
July-20	3358	3.32%	572	17.03 %
August -20	5605	5.55%	726	12.95 %

September-20	8275	8.19%	583	7.03 %
October-20	20326	20.12%	624	3.06 %
November-20	16480	16.32%	254	1.54 %
December-20	21110	20.90%	126	0.59 %
January-21	24333	24.09%	100	0.41 %
Total	101004	100	3206	3.17 %

Table 2 : Month Wise Gender Distribution Of Positivity

Month	Total Positive	Males	Percentage	Females	Percentage
June	221	145	66 %	76	34%
July	572	322	56 %	250	44%
Aug	726	426	59 %	300	41%
Sep	583	345	59 %	238	41%
Oct	624	365	58 %	259	42%
Nov	254	135	53 %	119	47%
Dec	126	75	59 %	51	41%
Jan	100	54	54 %	46	46%
Total	3206	1867	58 %	1339	42%

Table 3 : Geographic Distribution Of Positive Samples

Geographic distribution	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Total samples received	Total percent
Bengaluru urban	163	502	576	402	247	77	63	49	21813	21.59
Bengaluru rural	0	1	2	6	2	29	24	15	11388	11.27
Other Districts	59	69	147	175	374	146	38	35	67730	67.05
Other states	1	0	1	0	3	0	0	0	73	0.07
Total positives [n=3206]	224	572	726	583	626	252	125	99	101004	100

Table 4 : Geographical Distribution Of Positivity

Place	Total samples	Total	Positive Percentage
		positive	
Bengaluru urban	21813	2079	9.53
Bengaluru rural	11388	79	0.69
Other Districts	67730	1043	1.54
Other states	73	5	6.85
Total	101004	3206	3.17

Table 5 : Age Wise Distribution Of Positive Cases

Age in yrs	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	Total
1-18 yrs	n=11	n= 60	n=65	n=43	n=48	n =32	n =8	n =20	n=287
	-4.90%	- 10.50%	-8.90%	-7.40%	-7.70%	-12.70%	-6.40%	- 20.20%	[8.95]
19- 40 yrs	n=100	n=266	n=353	n=263	n=263	n = 83	n=56	n = 31	n=1415
	-44.30%	- 46.50%	- 48.70%	-45.10%	-42.00%	-32.90%	44.80%	- 51.30%	[44.14]
41-60 yrs	n=82	n=193	n=230	n= 202	n=205	n=78	n =47	n =32	n=1069
	-36.80%	- 33.70%	- 31.70%	-34.60%	-32.80%	-30.90%	- 37.60%	- 32.30%	[33.34]
>60 yrs	n=30	n=53	n=78	n =75	n =110	n=59	n =14	n =16	n=435
	-13.40%	-9.20%	- 10.70%	-12.90%	-17.60%	-23.40%	- 11.20%	- 16.10%	[13.57]
TOTAL	n=223	n=572	n=726	n=583	n=626	N=252	n =125	n =99	3206

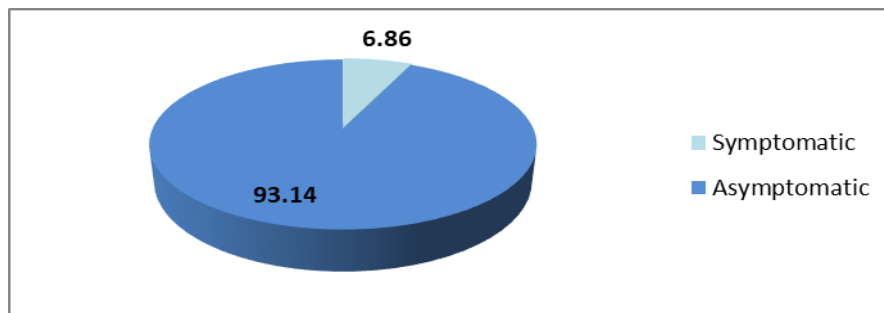


Fig 1: Percentage Distribution Of Symptomatic And Asymptomatic Cases

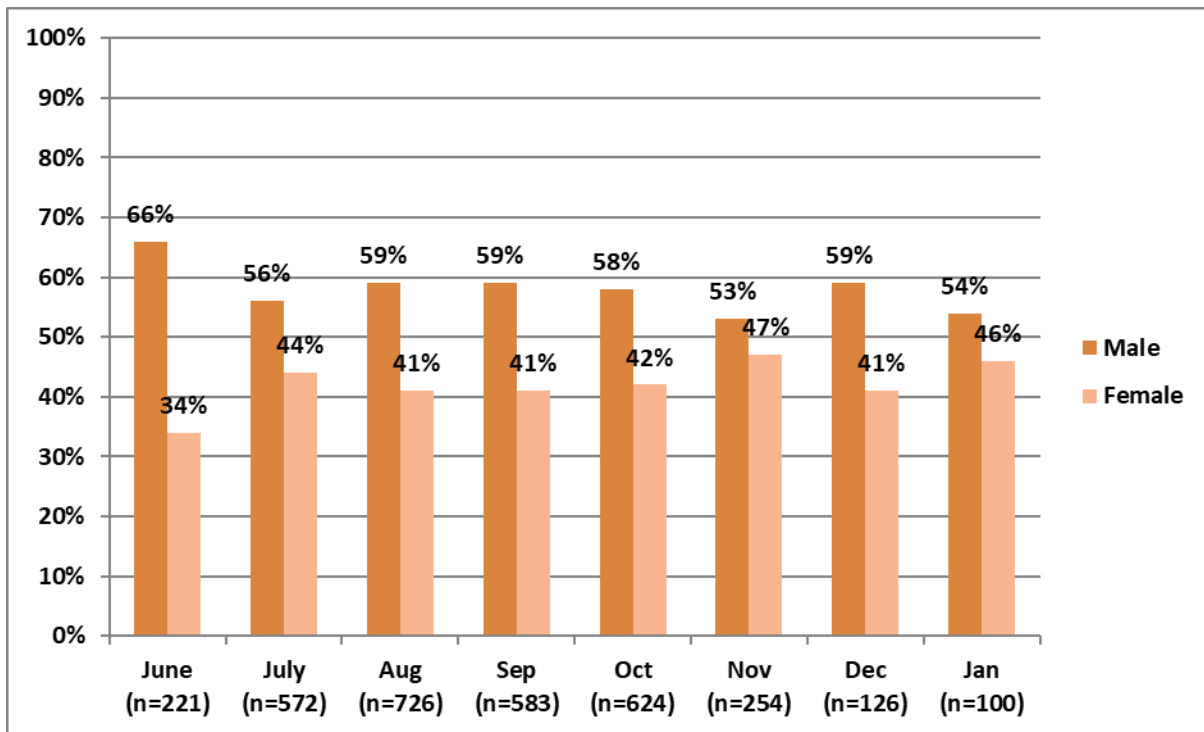


Fig 2 :Month Wise Gender Distribution Of Positivity

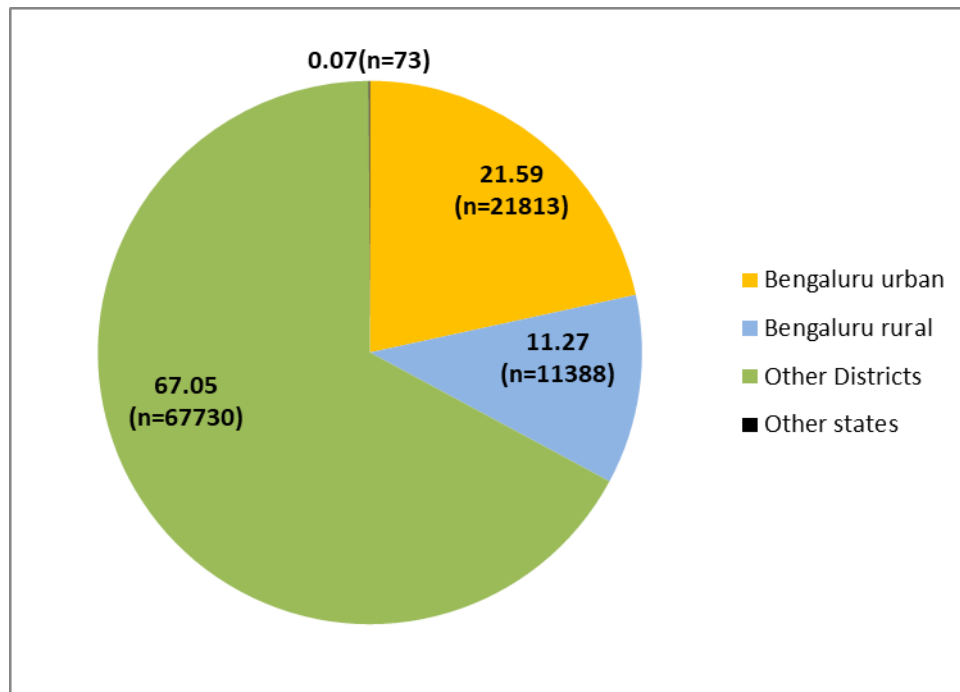


Fig 3 : Percentage Of Total Samples Received Region Wise

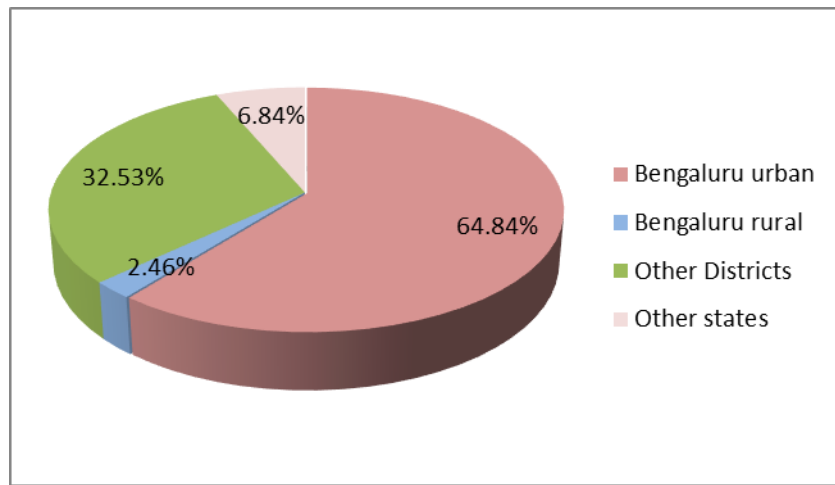


Fig 4 :Percentage Of Positives From Total Positives

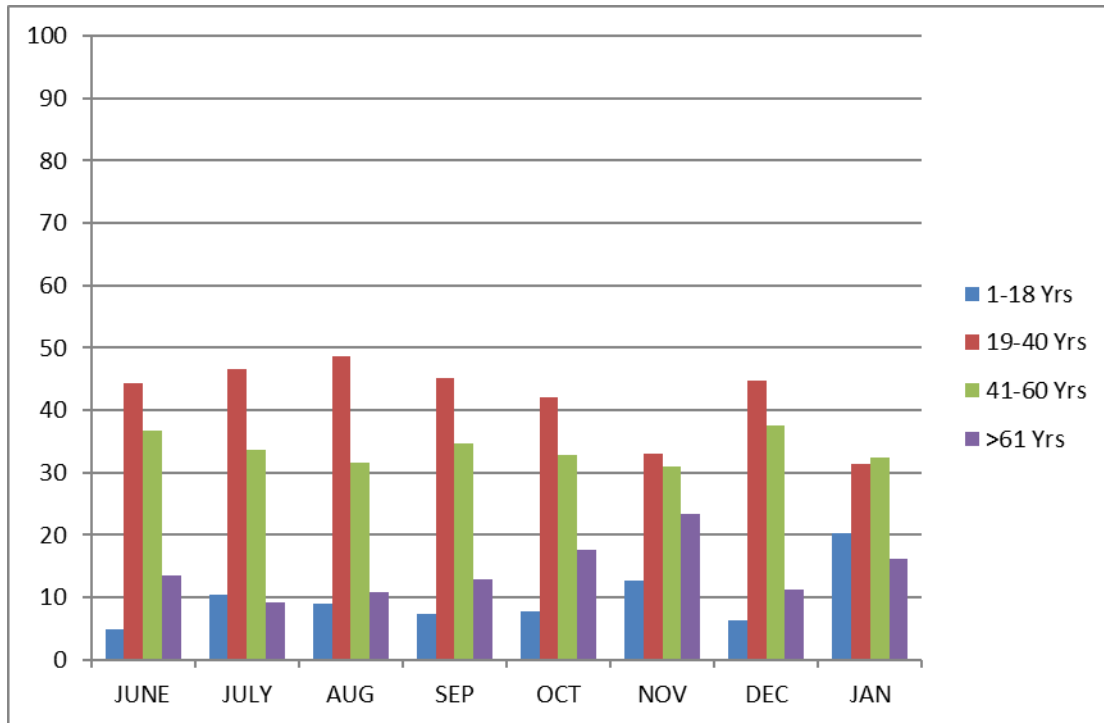


Fig 5 :Age Wise Distribution Of Percentage Positives