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Evaluation of Prevalence Amongst Medically Compromised Patients Visiting to The Department of Oral and Maxillofacial Surgery.

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Abstract

With the evolution in medical science with upgrade in the field of medicine and surgery; there has been an equal upsurge for preponderance of a number of diseases and conditions due to lifestyle changes that contribute to dietary changes, sedentary lifestyle, environ mental changes. The veracity of oral surgeons is round-the-clock under scrutiny, oral surgeons have immeasurably added to it by expanding their view to inclusion of a vivid health picture of each individual. The present study was envisaged with a view to address the prevalence of medical conditions like Cardiovascular conditions, Diabetes and Thyroid that oral surgeons often encounter in day-to-day clinical practice and those which often require extra caution while treating. Utmost care is essential to prevent complications that can otherwise lead to morbidity and mortality.

Keywords: hypertension, diabetes, cardiovascular disease, thyroid, prevalence, medically com promised, oral and maxillofacial surgery

Introduction

Systemic disorders are defined as "true abnormalities or diseases with signs and symptoms that deviate from normal and that define diseases such as diabetes mellitus".[1]

Similarly, Dorland's dictionary defines systemic disease as "one that affects a number of organs and tissues, or affects the body as a whole", which affects the lifestyle and daily activity of people.[2]

In parallel, a medically compromised patient is defined as a person suffering with medical disorder and may get compromised while treating other pathology.[3]

As the population of elderly patients most commonly visits oral surgeons; there are inherent chances of increased number of medically compromised patients visiting to the department of oral and maxillofacial surgery.

An informed consent is advised for each Medi cally compromised patient prior to any oral surgical procedures along with fitness certificate from their physician.[4]

The dental practice has improved more now-a-days compared to that it was in last two decades. A variety of surgeries that include both minor and major oral surgical procedures viz; extractions, dis-impactions, enucleation of cysts and tumors, maxilla-mandible fractures, dis location of jaw, salivary gland tumors, TMJ disorders, management of bacterial, viral and fungal infections of entire maxillofacial region, placement of dental implants and advanced surgical procedures and bone augment action procedures.

The prime goal of the present study was to assess the prevalence of medically compromised conditions in patients seeking dental treatments in the Department of Oral and Maxillofacial surgery.

Methodology

The patients visiting to the O.P.D of Department of Oral and Maxillofacial surgery of M.A. Rango on Wala College of Dental Sciences and Research Centre, Pune from 1st September 2022 to 28th February 2023 were reviewed for the presence of medically compromised conditions. Demo graphic data regarding gender and age was collected.

The medically compromised conditions were classified into 3 groups viz; cardiovascular disease (CVD), Diabetes mellitus and Thyroid disorder. The patients with known history of these 3 disorders and on medication were included in the present study.

Inclusion criteria

- Patients aged between 30-60 years.
- Males and females showing positive history of cardiovascular disease.
- Males and females showing positive history of diabetes mellitus.
- Males and females showing positive history of thyro id disorder.

Exclusion criteria

- Patients below 30 years of age
- Patients above 60 years of age
- Patients showing positive history of medically compromised conditions other than cardio vascular disease, diabetes mellitus and thyroid disorder
- Pregnant females and lactating mothers

Statistical Data Analysis

The data on categorical variables is shown as n (% of cases). The inter-group statistical comparison of distribution of categorical variables is done using Chi-Square test. All the results are shown in tabular as well as graphical format to visualize the statistically significant difference more clearly.

In the entire study, the p-values less than 0.05 are considered to be statistically significant. The entire data is statistically analyzed using Statistical Package for Social Sciences (SPSS ver 24.0, IBM Corporation, USA) for MS Windows.

Results

A total of 400 patients were included in the present study (Males -228, Females - 168) aged from 30 years to 60 years. The prevalence of cardiovascular diseases, diabetes and thyroid was studied based on age and gender demographic data.

Table 1: Distribution of demographic and prevalence of various medical conditions.

		No. of cases	**% of cases**
Age groups (years)	30 – 40	110	28.2
	41 – 50	137	35.1
	51 – 60	143	36.7
Gender	Male	222	56.9
	Female	168	43.1
CVS	No	186	47.7
	Yes	204	52.3
Diabetes	No	201	51.5
	Yes	189	48.5
Thyroid	No	236	60.5
	Yes	154	39.5

Table 2: Distribution of prevalence of various medical conditions according to gender in each age group.

		Age group (years)											
		30 – 40 years				41 – 50 years				51 – 60 years			
Medical condition		Male		Female		Male		Female		Male		Female	
		n	%	n	%	n	%	n	%	n	%	n	%
CVS	No	25	39.1	23	50.0	30	45.5	49	69.0	33	35.9	26	51.0
	Yes	39	60.9	23	50.0	36	54.5	22	31.0	59	64.1	25	49.0
	P-value	0.254^{NS}				0.005^{**}				0.079^{NS}			
Diabetes	No	30	46.9	26	56.5	29	43.9	35	49.3	47	51.1	34	66.7
	Yes	34	53.1	20	43.5	37	56.1	36	50.7	45	48.9	17	33.3
	P-value	0.318^{NS}				0.530^{NS}				0.072^{NS}			
Thyroid	No	54	84.4	21	45.7	54	81.8	28	39.4	62	67.4	17	33.3
	Yes	10	15.6	25	54.3	12	18.2	43	60.6	30	32.6	34	66.7
	P-value	0.001^{***}				0.001^{***}				0.001^{***}			

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. **P-value<0.01, ***P-value <0. 001, NS – Statistically non-significant.

Table 3: Distribution of prevalence of various medical conditions according to gender (all age groups combined

		All age groups			
		Male		Female	
Medical condition		n	%	n	%
CVS	No	88	39.6	98	58.3
	Yes	134	60.4	70	41.7
	Total	222	100.0	168	100.0
	P-value	0.001^{***}			
Diabetes	No	106	47.7	95	56.5

	Yes	116	52.3	73	43.5
	Total	222	100.0	168	100.0
	P-value	0.085^{NS}			
Thyroid	No	170	76.6	66	39.3
	Yes	52	23.4	102	60.7
	Total	222	100.0	168	100.0
	P-value	0.001***			

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. ***P-value<0.001, NS – Statistically non-significant.

Table 4: Distribution of prevalence of various medical conditions according to age groups in each gender group.

		Gender											
		Male						Female					
		30 – 40 yrs		41 – 50 yrs		51 – 60 yrs		30 – 40 yrs		41 – 50 yrs		51 – 60 yrs	
		n	%	n	%	n	%	n	%	n	%	n	%
CVS	No	25	39.1	30	45.5	33	35.9	23	50.0	49	69.0	26	51.0
	Yes	39	60.9	36	54.5	59	64.1	23	50.0	22	31.0	25	49.0
	Total	64	100.0	66	100.0	92	100.0	46	100.0	71	100.0	51	100.0
	P-value	0.475^{NS}						0.056^{NS}					
Diabetes	No	30	46.9	29	43.9	47	51.1	26	56.5	35	49.3	34	66.7
	Yes	34	53.1	37	56.1	45	48.9	20	43.5	36	50.7	17	33.3
	Total	64	100.0	66	100.0	92	100.0	46	100.0	71	100.0	51	100.0
	P-value	0.666^{NS}						0.162^{NS}					
Thyroid	No	54	84.4	54	81.8	62	67.4	21	45.7	28	39.4	17	33.3
	Yes	10	15.6	12	18.2	30	32.6	25	54.3	43	60.6	34	66.7
	Total	64	100.0	66	100.0	92	100.0	46	100.0	71	100.0	51	100.0
	P-value	0.023*						0.463^{NS}					

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. *P-value<0.05, NS – Statistically non-significant.

Table 5: Distribution of prevalence of various medical conditions according to age groups (Both gender groups combined.

		Age group (years)					
		30 – 40 years		41 – 50 years		51 – 60 years	
Medical condition		n	%	n	%	n	%
CVS	No	48	43.6	79	57.7	59	41.3
	Yes	62	56.4	58	42.3	84	58.7
	Total	110	100.0	137	100.0	143	100.0
	P-value	0.014*					
Diabetes	No	56	50.9	64	46.7	81	56.6
	Yes	54	49.1	73	53.3	62	43.4

	Total	110	100.0	137	100.0	143	100.0
	P-value	0.248^{NS}					
Thyroid	No	75	68.2	82	59.9	79	55.2
	Yes	35	31.8	55	40.1	64	44.8
	Total	110	100.0	137	100.0	143	100.0
	P-value	0.111^{NS}					
P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. *P-value<0.05, NS – Statistically non-significant.							

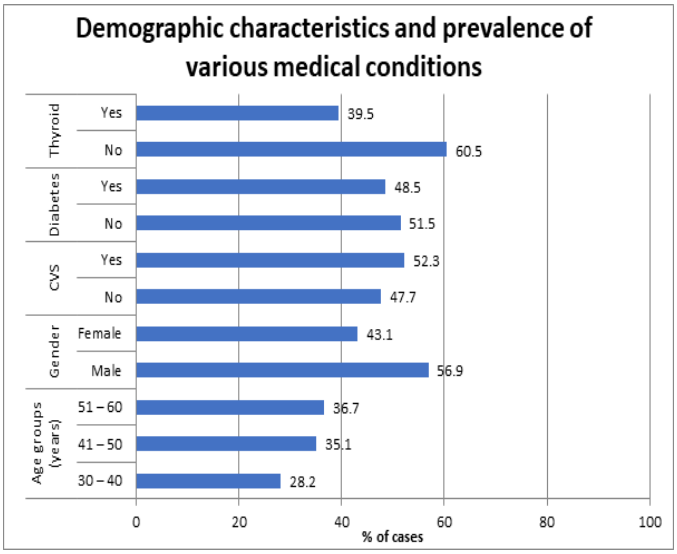
In the age group 30 – 40 years, distribution of prevalence of medical conditions such as CVS, diabetes mellitus did not differ significantly between group of male and group of female cases studied (P - value > 0.05 for both). In the age group 30 – 40 years, distribution of prevalence of thyroid dysfunction was significantly higher in group of female cases compared to group of male cases studied (P-value<0.05).

In the age group 41 – 50 years, distribution of prevalence of medical condition diabetes mellitus did not differ significantly between group of male and group of female cases studied (P-value>0.05). In the age group 41 – 50 years, distribution of prevalence of medical conditions such as CVS was significantly higher in group of male cases compared to group of female cases studied (P – value < 0.05).

In the age group 41 – 50 years, distribution of prevalence of thyroid dysfunction was significantly higher in group of female cases compared to group of male cases studied (P-value<0.05).

In the age group 51 – 60 years, distribution of prevalence of medical conditions such as CVS, diabetes mellitus did not differ significantly between group of male and group of female cases studied (P-value>0.05 for both). In the age group 51 – 60 years, distribution of prevalence of thyroid dysfunction was significantly higher in group of female cases compared to group of male cases studied (P-value<0.05).

Figure 1: Distribution of demo graphic data and prevalence of medical conditions



Figures 2: Distribution of various medically compromised conditions according to gender

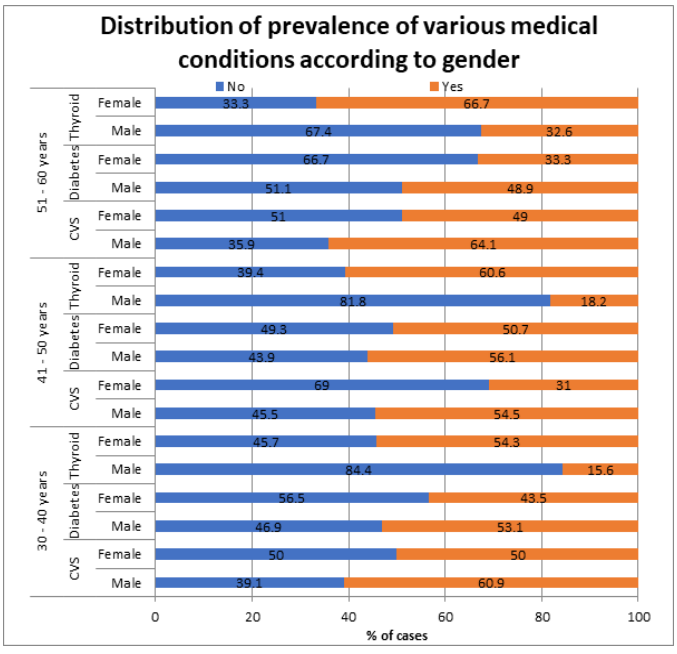


Figure 3: Distribution of prevalence of various medical conditions according to gender (All age groups combine d).

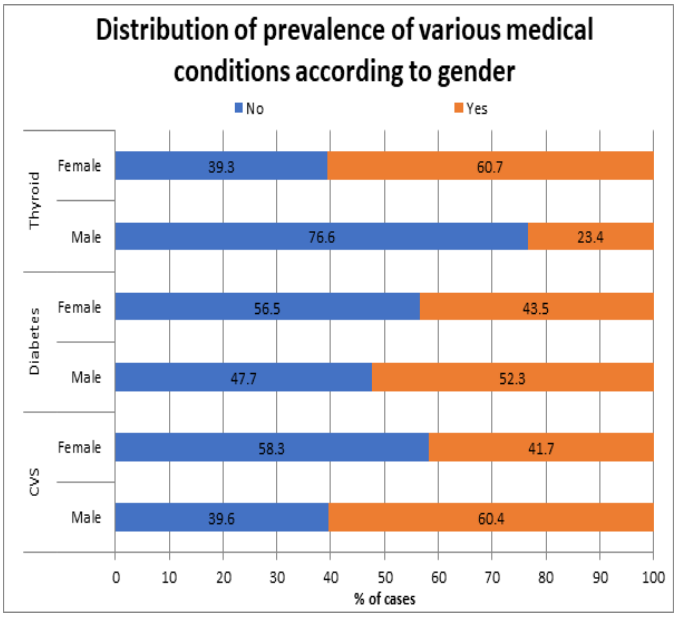


Figure 4: Distribution of prevalence of various medical conditions according to age groups in each gender group.

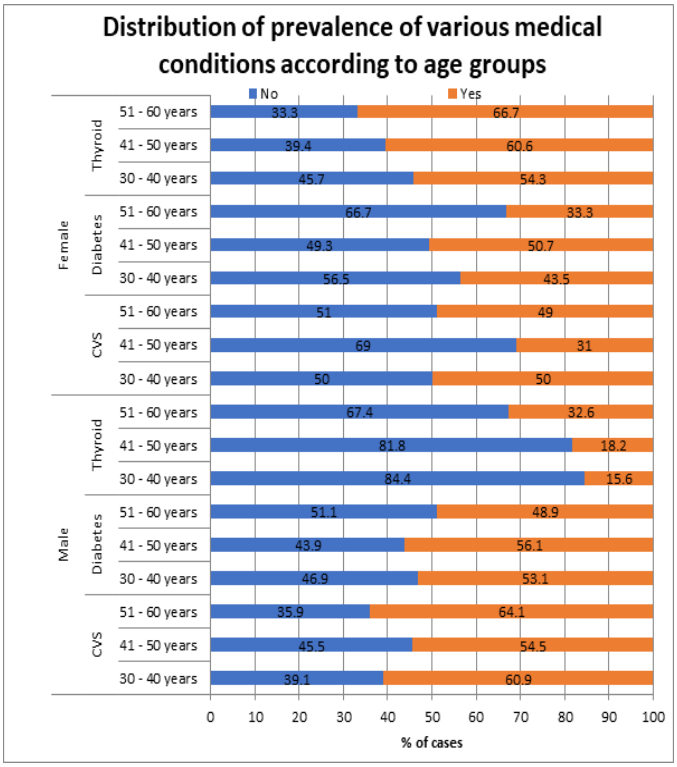
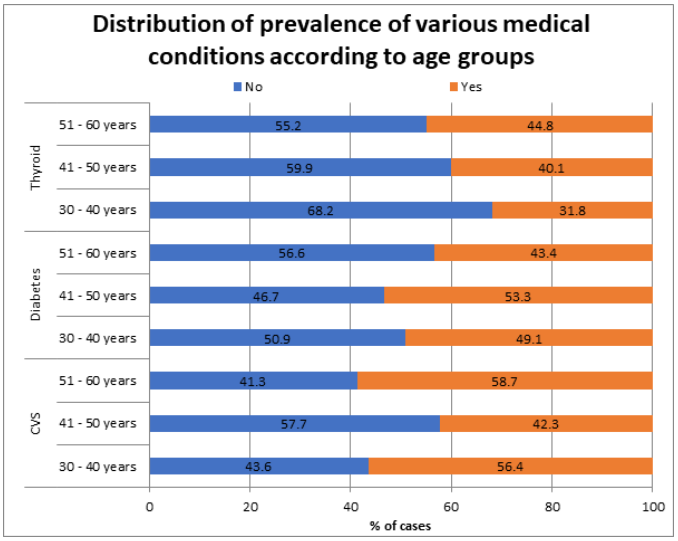


Figure 5: Distribution of prevalence of various medical conditions according to age groups (Both gender groups combined).



Discussion

Cardiovascular diseases comprise of hypertension, angina pectoris, myocardial infarction and now the values been renewed to 140 – 90 mm Hg according to recent Consensus put forward by the National Committee on the Prevention, Detection, Evaluation and Treatment of High Blood Pressure.[5]

The first condition studied was CVS of which the prevalence in males in the age group 30-40 years was 60.9%, while in 41-50 years was 54.5% and in 51-60 years age group was 64.1%. Similarly, the CVS prevalence in females in 30-40 years age group was 50% while in 41-50 years age group was 31% while the prevalence was 49% in 51-60 years age group.

Oral surgical procedures in a well-controlled hyper tensive patients hardly pose a risk in dental clinics. Appropriate recording of blood pressure is advised prior to initiation of any oral surgical procedure; in case the values pose to be higher, the surgical procedures are temporarily abandoned and postponed to a later date. Usually, the dental appointments are scheduled early morning and for shorter durations so as to avoid stressful

situations. Every patient with positive cardiovascular disease history should be instructed to ingest their prescribed medications on timely manner. Certain anxiolytic agents like diazepam 5-10mg can be prescribed to anxious patients a night before and 1-2 hour prior to scheduling any minor or major oral surgical procedures. In case of high blood pressure values, patient should be referred to general physician before initiating any dental treatment. Local anesthesia (LA) with adrenalin should be used judiciously or LA without vasoconstrictor is advised for patients with hypertension so as to avoid a sudden rise in blood pressure.[6,7]

In emergency cases, the management should be as mini Mally invasive as possible with concomitant prescription of antibiotics and analgesics. Any oral surgical procedure is deferred until blood pressure values fall back to normal so as to refrain from any hemorrhage incidents. The most commonly prescribed analgesics like NSAIDs such as ibuprofen, indomethacin, naproxen show interaction with anti-hypertensive drugs like β-blockers, diuretics, angiotensin-converting enzyme inhibitors and are known to lower their anti-hypertensive action of drugs. As a result, if medications have to be advised for a longer period of time, adequate measures have to be taken.[8]

In cases of hypertensive emergencies (the systolic and diastolic blood pressure > 210/ 120 mmHg); Furosemide 40 mg is advised via oral route. In case this proves in sufficient to decline the raised blood pressure, Captopril 25mg via oral or sublingual route is advised to be administered. In severe cases, wherein the blood pressure fails to decline 30 minutes post administration of Captopril, the patient should be immediately referred to the nearest hospital.[9]

Patients consuming Aspirin on daily basis should be monitored pre - operatively for a couple of days depending on the con centration of the tablet. Pre scription of steroids should be refrained. The patients currently on anti-platelet or anti-coagulant medications therapy often require monitoring bleeding time (BT), clotting time (CT), prothrombin time (PT), international normalized ratio (INR), Partial thromboplastin time with kaolin (p TTK) for minor as well as major oral surgical procedures.

The second condition studied was Diabetes. The primary objective of managing diabetic patient is to treat him/her at near normal levels to avoid acute or chronic complications. Hypoglycaemic attack episodes can be prevented maintaining by proper history of meals and medications. Oro-facial infections should be treated briskly and as minimally invasive as possible since wound healing in diabetics is extremely convoluted in nature. Glycosylation occurs around wound margins in cases of hyperglycaemic cases and uncontrolled diabetic cases so oral and maxillofacial surgeries should be refrained in such cases.

The prevalence of Diabetes in the present study in Males in 30-40 years age group was 53.1% while in 41-50 years age group was 56.1% and similarly in the 51-60 years age group was 48.9%. On the contrary, there was 43.5% prevalence seen in 30-40 years age group, compared to 50.7% in 41-50 years age group and the least prevalence i.e only 33.3% in 51-60 years age group.

Routine minor surgical cases are advised to be treated in early morning sessions post consumption of meals and medications. For routine oral surgical procedures, the desired blood glucose levels are 120-180mg/dl. In severe and emergency orofacial infections and maxillofacial trauma cases, appropriate antibiotics have advised to be administer prior to initiation of any surgical procedures with concomitant supportive post-operative medications.

Osseointegration around a dental implant is known to get affected and altered in hyperglycaemic cases as a result, placement of dental implants in patients with high blood sugar levels should be carried out only once sugar levels are under control so as to avoid intra-operative and post-operative complications.[10]Another screening method was proposed by Parnell Anthony et al 1986 for medically compromised patients especially ones suffering from hypertension and diabetes.[11]

Thyroid gland is known to cause thyroidism, a metabolic disorder caused due to alteration of T_3 (triiodo-thyronine), T_4 (thyroxine) and TSH (thyroid stimulating hormone) levels. Thyroid patients are commonly classified as euthyroid (normal), hypo thyroid (patients showing marked decline in thyroid hormones), hyper thyroid (patients showing marked rise in thyroid hormones).

The third condition studied was Thyroid for which the prevalence seen in males amongst 30-40 years age group was 15.6% while in the 41-50 years age group was 18.2% and on the contrary, the 51-60 age group showed much greater prevalence i.e 32.6% compared to the other 2 groups. Nevertheless, the prevalence of thyroid was much greater in females compared to males. The 30-40 age group showed 54.3%, while 60.6% prevalence seen in 41-50 years age group and 66.7% prevalence seen in 51–60-year age group.

Certain common characteristics of hypo thyroidism include anaemia, cold in to clearance, cardiomegaly, constipation, cretinism (in children), hypotension, brady cardia, inverted T waves in ECG, lethargy, low-amplitude of QRS waves in ECG, myxoedema, paraesthesia, altered cardiac output, decline in respiratory rate, seizures, tendency for gain in weight, hypertelorism, hyper - lipidaemia. Hence, it is necessary for every oral surgeon to treat hypo thyroid patients with utmost care and should monitor their consumption of medications at regular intervals prior to initiation and post operatively to refrain any thyroid related complications.[12,13]

Similarly, hyper thyroidism presents with characteristics like abdominal pain, heart murmur, diplopia, raised alkaline phosphatase, dysrhythmias, fatigue, hypercalcemia, heat intolerance, goitre, increased appetite, increased cardiac output, increased pulse, palpitations, proptosis, psychosis, tachycardia, psychosis, tremors, warm skin, weight loss, nervousness. As a result, it is must for every oral surgeon to assess thyroid levels to prevent intra-operative and post-operative com plications post minor as well as major oral and maxillofacial surgeries.[14]

Cottone and Kafrawy 1979 et al stated 68.5% of dental patients showed positive history of at least one systemic disease.[15] Few other authors like Nery E.B et al reported 27.6% of systemic diseases amongst patients visited to private dental clinics whereas 46.3% among those who visited academic dental centre group.[16]

Similarly, Rhodus N.L 1989 et al carried out a study on assessing implications of altering medical profile amongst dental school population and reported a marked increase in systemic diseases from 7.3% in 1976 to 24. 6% in 1986.[17]Alastir Goss N 1984 et al assessed systemic diseases in terms of adverse reactions between systemic diseases, dental treatment, and the urgency of emergency management.[18]

Another survey carried out by Rothwell and Wagg to assess the awareness of patients attending a dental centre regarding their medical status and compared the results with verbal history taking. They concluded 167 patients showed positive history of systemic diseases but were not aware of the condition and its relation to the dental treatment. Amongst 500 patients, hardly 4 were aware

about having a systemic disease and their relevance to the dental treatment.[19]

Conclusion

The key to successful dental management of any medically compromised patient is by thorough evaluation of the patient's current medical condition along with critical asepsis during intra-operative period followed by accurate prescription of medications and appropriate post-operative care. In essence, the authors conclude that the prevalence of CVS was more in all age groups in males compared to the females. Similarly, the prevalence was least in 41-50 years age group. In parallel, the prevalence of Diabetes was higher in males in all age groups compared to females. Analogous to CVS and Diabetes, the prevalence of thyroid was much higher in females in all age groups than compared with males. As a result, the authors can evidently conclude that only relying on the medical history provided by the patient may not be sufficient with simultaneoushaema to logical and other required investigations for better management of patients with medically compromised conditions.

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