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Literature Review

Critical Evaluation of Ayurvedic *Shabda Pariksha* (Sound Examination) In Diagnosis of Diseases WSR to Stethoscopic Auscultation

Subhash Waghe, D.

Department of Roga Nidana (Diagnosis), Jupiter Ayurvredic College, Nagpur

*Correspondence to: Dr. Subhash Waghe, D., Department of Roga Nidana (Diagnosis), Jupiter Ayurvredic College, Nagpur.

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Abstract

The various sound produced in the body are used as tools in the diagnosis of disease by ancient Ayurvedic acharyas. Acharya Charaka, in *Vimansthana*, had asked to examine the bowel sounds, joint crepitation and other peculiar sounds produced in the body such as cough and hiccups to diagnose the disease condition of that particular system. Apart from this ancient Ayurvedic scholars have described the typical sound produced in various disease conditions such as *Maha Shwasa* (Kussmaul's breathing), *Tamak shwasa* (Bronchial Asthma), *Krukaj Kasa* (Whooping cough), *Swarabheda* (Laryngeal disease), *Vakastambha* (Tongue paralysis) causing *Minminitva* (Nasal speech) and *Gadgadatva* (Spastic speech), *Ardita* (Facial Palsy) causing *Vaksanga* (dysarthria). *Sandhivata* (Osteoarthritis) causing joint crepitations. *Alasaka* (Gastroparesis) causing abdominal gurgling, *Apatantraka* & *Apatanaka* (Tetanus) causing laryngeal stridor with loud audible wheeze. *Sangrahani* & *Ghati Yantra* (IBS) causing abdominal gurgling. *Pandu* (Anemia) causing tachycardia. In ancient times auscultation was done purely through ears and no any reference to stethoscope like devices is found in the ancient books. However, the picture depicting the sage Kashyapa auscultating the infant heart sound with hollow Papaya branch is available which could be world's first prototype of stethoscope. The ancient Indian physicians used to directly apply the ear to the chest to hear the heart and lung sounds. The heart sounds, lung

sounds and bowel sounds, were auscultated by keeping the ear in close contact with chest and abdomen respectively. Acharya Vinodlal Sen had described some heart lung sounds using this examination. With the advent of stethoscope by French Physician Rinne Lennec (1781-1836), auscultation has occupied the prime position as physical examination method in the diagnosis of the chest diseases to such an extent that it has become the symbol of modern day physician. It is observed and concluded that Auscultation as tool of examining the patient to diagnose the disease is very well mentioned in Ayurveda.

Introduction

The various sound produced in the body are used as tools in the diagnosis of disease by ancient Ayurvedic acharyas. Acharya Charaka, in *Vimansthana*, had asked to examine the bowel sounds, joint crepitation and other peculiar sounds produced in the body such as cough and hiccups to diagnose the disease condition of that particular system. Apart from this ancient Ayurvedic scholars have described the typical sound produced in various disease conditions such as *Maha Shwasa* (Kussmaul's breathing), *Tamak shwasa* (Bronchial Asthma), *Krukaj Kasa* (Whooping cough), *Swarabheda* (Laryngeal disease), *Vakastambha* (Tongue paralysis) causing *Minminitva* (Nasal speech) and *Gadgadatva* (Spastic speech), *Ardita* (Facial Palsy) causing *Vaksanga* (dysarthria). *Sandhivata* (Osteoarthritis) causing joint crepitations. *Alasaka* (Gastroparesis) causing abdominal gurgling, *Apatantraka* & *Apatanaka* (Tetanus) causing laryngeal stridor with loud audible wheeze. *Sangrahani* & *Ghati Yantra* (IBS) causing abdominal gurgling. Pandu (Anemia) causing tachycardia. In ancient times auscultation was done purely through ears and no any reference to stethoscope like devices is found in the ancient books. However the picture depicting the sage Kashyapa auscultating the infant heart sound with hollow Papaya branch is available which could be world's first prototype of stethoscope. The ancient Indian physicians used to directly apply the ear to the chest to hear the heart and lung sounds. The heart sounds, lung sounds and bowel sounds, were auscultated by keeping the ear in close contact with chest and abdomen respectively. Acharya Vinodlal Sen had described some heart lung sounds using this examination. With the advent of stethoscope by French Physician Rinne Lennec (1781-1836), auscultation has occupied the prime position as physical examination method in the diagnosis of the chest diseases to such an extent that it has become the symbol of modern day physician.

Review of Literature

Examination of Sound Through Auscultation

- Under eight fold examinations, *Shabda Pariksha* (sound examination) should be done [1].
- The sound produced in infective or gangrenous wound should be noted [2].
- Bowel sounds, Joint crepitation and other peculiar sounds produced in the body should be examined through auscultation [3].
- The other peculiar sounds like hiccups and cough should also be heard [3].

Disease Condition & Type of Sound

- *Shwasa vyadhi* (Dyspnea), the respiratory sound is harsh like as if blowing the fire in pot. (*Bhinna Kansya Tulya Swara*) [4]
- In *Kasa vyadhi* (Cough), the cough sound is like as if striking the bronze pot [5].
- In *Jara Kasa vyadhi* (Cough due to old age), the cough sound is like as if striking the bronze pot [6].

● In *Kshataj Kasa* (Bronchitis), there is pigeon like sound (*Paravat Eva Koojanam*) [7]

● In *Krukkaj Kasa* (whooping cough), there is whoop whoop like sound while coughing.

● In *Tamak Shwasa* there is loud audible wheeze (*Kanthe ghurghurakam*) [8]

● In *Maha Shwasam* there is noisy respiration like that of angry bull (*Matta Vrushabh Eva*) [9]

● In *Vataj Swarabheda* there is hoarseness of voice [10].

● In *Medoj Swarabheda* there is low tone voice [11].

● In *Neela Manya Marmaghat* (trauma to laryngeal nerve), there is hoarseness of voice [12].

● In *Pandu* (Anemia) the *Dhad Dhad* sound is noticed with tachycardia [13].

● In *Sangraha Grahani* (IBS), there is abdominal gurgling (*Antra Koojanam*) [14].

● In *Ghati Yantra Grahani* (IBS), there is abdominal gurgling of greater degree (*Gudgud Dhwani*) [14].

● In *Udaradhman* (abdominal distension), there is abdominal gurgling (*udar aatop Gudgud shabda*) [15].

● In *Apatantraka/Apatanaka* (Tetanus), there is pigeon like sound (*Kapot Eva Koojanam*) [16]

● In pathological states of lungs, the respiration similar to breath of snake or flute like sound is produced. If there is accumulation of cough, pus or blood in lungs then the crepitation are heard. (sound produced while cleaning the mudded leaf [17].

● In cardiac enlargement, the sound is not heard at its regular site but at the displaced site. And the pitch of the sound is comparatively slower [17].

Discussion

The various sound produced in the body are used as tools in the diagnosis of disease by Ayurvedic acharyas. Acharya Charaka, in *Vimansthana*, had asked to examine the bowel sounds, joint crepitation and other peculiar sounds produced in the body such as cough and hiccups to diagnose the particular disease condition of particular system. Apart from this ancient Ayurvedic scholars have described the typical sound produced in various disease conditions such as *Tamak shwasa* (Bronchial Asthma) causing audible wheeze. *Maha Shwasa* (Kussmaul's breathing) causing loud audible wheeze. *Krukaj Kasa* (Whooping cough) causing characteristic Whoop sound, *Swarabheda* (Laryngeal disease) causing hoarseness of voice. *Vakastambha* (Tongue paralysis) causing *Minminitva* (Nasal speech) and *Gadgadatva* (Spastic speech), *Ardita* (Facial Palsy) causing *Vaksanga* (dysarthria). *Sandhivata* (Osteoarthritis) causing joint crepitations. *Alasaka* (Gastroparesis) causing abdominal gurgling, *Apatantraka* & *Apatanaka* (Tetanus) causing laryngeal stridor with loud audible wheeze.

Coughing is characterized by the sudden expulsion of air from the airways with typical sound. The quality of cough sound may provide some clue about the underlying disease.

Dog barking cough with and breathing with whistling is observed in viral cough.

Rattling cough is observed in bronchitis. Long bouts of cough are observed in COPD due to collapse of lower lung alveoli. Whereas wheezing cough is observed in Asthma. These qualitative acoustic differences of cough could be well picked up by the trained physicians.

Swarbheda refers to change of voice (*Bhinna swar*) which is unpleasant (*udweg janak*) and may resemble the rough sound of donkey (*Gardhbh wat khar*) or crow (*Kak wat*) due to invasion of sound tract by morbid doshas.

Sangrahani & Ghati Yantra (IBS) causes abdominal gurgling due to excessive wind production in the GI tract.

The joint crepitation (***Sandhi Aatopa***) occurs due to release of air in the synovial fluid during movement of the joint.

Vrudhhasya Swarbheda (Change of voice in old peoples) mentioned by acharya Sushruta in Uttartantra, indicate chronic atrophic laryngitis.

Sahaj Swarabheda mentioned by acharya Sushruta in Uttartantra, refers to congenital hoarseness of voice.

Chirothha Swarabheda mentioned by acharya Sushruta in Uttartantra refers to chronic laryngitis.

Swar upghat karak asadhya galganda mentioned by acharya Sushruta in Nidansthana may refer to myxoedematous swelling compressing trachea externally.

Neela Manya Marmaghat mentioned by acharya Sushruta in Sharisthana six could be trauma to laryngeal nerve resulting in hoarseness of voice.

Medoj Swarabheda mentioned by acharya Sushruta in Uttartantra, may occur in obese peoples but as it has been mentioned as incurable; this could most likely be fatty infiltration of larynx as may occur in laryngeal lipoma.

In ancient times auscultation was done purely through ears and no any reference to stethoscope like devices is found in the ancient books. The ancient Indian physicians used to directly apply the ear to the chest to hear the heart and lung sounds. The heart sounds, lung sounds and bowel sounds, were auscultated by keeping the ear in close contact with chest and abdomen respectively. With the advent of stethoscope by French Physician Rinne Lennec (1781-1836), auscultation has occupied the prime position as physical examination method in the diagnosis of the chest diseases to such an extent that it has become the symbol of modern day physician. However, the first prototype of stethoscope was invented by Chinese and probably the Indian sage Kashyapa. We find a sculpture of sage Kashyapa depicting the auscultation of the chest of a child with the hollow branch of pappya at Kaneri matha museum, kolahapur (Maharashtra, India). However, the antiquity of the original sculpture from where this is designed could not be authenticated.

●The stethoscope is an instrument that does not significantly amplify sound, but, more important, acts as a selective filter of sound. Since sounds produced by breathing tend to be of relatively high pitch, the chest is auscultated with the diaphragm of the stethoscope.

Current Classification of Lung Sounds [18]

Breath Sounds

Normal - It is the sound heard through the chest wall of a healthy individual. It is a faint noise with a frequency between 200 to 600Hz heard through out the inspiration and at the beginning of expiration.

Bronchial Breathing - These are the breath sounds which resemble the noise of respiration heard through stethoscope on the neck (trachea). They are loud with a frequency between 200 to 2000Hz audible throughout inspiration and expiration. When the lung tissue is airless due to consolidation, the breath sounds are transmitted to the stethoscope. Bronchial breathing is generally heard over airless upper lobes as the mediastinal surface of the upper lobe is in direct contact with trachea.

Voice Sounds

Bronchophony - It is the speech heard through the chest wall with little loss of loudness resembling

the voice sound heard through the neck. When the lung between the trachea and point of auscultation is airless, the higher frequencies are transmitted through the solid lung and speech becomes intelligible. The acoustic mechanism of bronchial breathing and of bronchophony is the same.

Aegophony - These are the voice sounds transmitted through the chest wall with selective amplification of their higher frequencies and removal of low frequencies giving nasal bleating quality to the voice. The sound is distorted due to the presence of fluid or air in the pleural cavity. when consolidation is associated with a pleural effusion, the bronchial breath sounds are present but often quite decreased in intensity. Confirmation of the presence of bronchial breath sounds can be obtained by listening for egophony ("E to A" sound). This sound is elicited by asking the patient to say the letter "E" as one listens over the suspicious area with the stethoscope. When consolidation is present, the spoken "E" sound is converted to an auscultated "A" sound, similar to that produced by a bleating goat.

Whispering Pectrolioqye - In whispering, the abducted vocal cords do not oscillate and voice sound is generated by turbulent flow of air through the trachea, glottis and pharynx. Whisper lacks the powerful low frequencies of normal voice sounds and the high pitched components of noise of turbulence and the formants of vowel are transmitted through the airless lungs so that whispered speech becomes intelligible. This is whispering pectroliquy and occurs in consolidation state.

Adventitious Sounds

There are three types of abnormal breath sounds. They are collectively referred to as adventitious breath sounds.

Wheezing - Musical lung sounds are usually referred as wheezes when heard at a distance or at a mouth and Rhonchii when heard through the chest wall by stethoscope. It is produced when a critical velocity of gas flow passes through a slit like opening. When wheezes are local, one must consider external compression of an airway by enlarged lymph nodes or tumors. A lesion within the airway, such as an endobronchial malignancy or foreign body, also can produce a localized wheeze. Diffuse wheezing is present in inflammatory processes such as bronchitis, contraction of hypertrophied bronchial smooth muscle as seen in asthma, thick secretions of pneumonia.

a) Fixed Monophonic Wheezes - A single note of constant pitch is a characteristic sign of incomplete obstruction of principle or lobar bronchus by tumour or foreign body.

b) Random Monophonic Wheezes - It could be inspiratory, expiratory or continuous throughout the respiratory cycle. It is noticed in widespread airflow obstruction particularly in asthma.

c) Sequential Inspiratory Wheezes - It consists of a series of short musical sounds each of different pitch and loudness. It may be noticed in fibrosing alveolitis, asbestosis and other diffuse interstitial pulmonary fibrotic conditions.

d) Expiratory Polyphonic Wheezes - They refer to complex musical sounds (Loud hissing) beginning at the same time and continuing till the end of expiration. Polyphonic wheezing at rest is a reliable sign of widespread air flow obstruction.

e) Stridor - A loud musical sound resembling wheezing in its character and mode of origin. It could be noticed in tracheal stenosis. Inspiratory stridor in whooping cough.

- In fatal asthma, absence of wheezing is due to very high resistance to peripheral flow of air and as the airways cannot be set into oscillation.
- Absence of wheezing in emphysema with severe expiratory obstruction is may be due to loss of elastic recoiling of the lung tissue.

● In terminal ventilator failure the expiratory flow rate may be too low to generate wheezing.

Crackles / Crepitations - The other abnormal breath sound is the crackle, often called 'rale'. They are short explosive moist sounds heard through the chest wall attributed to the bubbling of secretions in the airways. The primary mechanism of crackling is explosive equalization of gas pressure between two compartments of the lung when closed section of the airways separating them opens suddenly. Crackles imply the snapping open of previously collapsed airways or alveoli. When crackles are heard during the initiation of inspiration, they are called early inspiratory crackles. When they occur toward the terminal portion of the inspiratory maneuver, they are referred to as late inspiratory crackles. At times, crackling sounds can be heard throughout the inspiratory phase and are called paninspiratory crackles. Since larger airways open first as inhalation progresses from residual volume, early inspiratory crackles may indicate large airways disease while late inspiratory crackles may indicate small airways problems as seen in congestive heart failure, pulmonary fibrosis or other interstitial pulmonary processes.

a) Late Inspiratory Crackles - A series of late inspiratory high pitched explosive sounds of variable intensity and spacing is a characteristic sign of fibrosing alveolitis, resolving lobar pneumonia and interstitial pulmonary edema (due to cardiac failure). When the patient bends forward, the crackles are silenced and returns on standing upright.

b) Early Inspiratory and Expiratory Crackles - Crackles during expiration and at the beginning of the inspiration are common in widespread airflow obstruction.

c) Crackling in pneumothorax - In left sided pneumothorax loud crackling is synchronous with the heart beat and may be heard near the left sternal border.

Gurgling - The final abnormal breath sound is called a gurgle. It is similar to the sound produced when one exhales through a straw placed in a glass of water. Gurgles are produced by airflow through liquid of varying viscosities in the airways. Gurgles suggest fluid in the airways. This may be produced by excessive serous secretion in alveolar cell carcinoma, infected purulent secretion of acute or chronic bronchitis or bronchiectasis or due to transudated fluid entering the airways from the alveoli as occurs in pulmonary edema.

Cardiac Auscultation [19,20]

The apex, lower left sternal edge, upper left sternal edge and upper right sternal edge should be auscultated with the bell and the diaphragm of the stethoscope. These locations corresponds to mitral, tricuspid, pulmonary, aortic area respectively and loosely identify sites at which sounds and murmurs arising from the four valves are best heard.

First Heart Sound (S1) - It results from the closure of the mitral and tricuspid valve at the onset of systole. It is loud in patients with large cardiac output, Vasodilatation, Exercise, Fever, Thyrotoxicosis and Mitral stenosis

It is quite in Obesity, Emphysema and Impaired left ventricular function

Second Heart Sound (S2) - It results from the closure of aortic and pulmonary valve during ventricular ejection. S2 is single during expiration. Inspiration causes physiological splitting of S2 into aortic followed by pulmonary component because increased right ventricular filling which delays pulmonary valve closure. The physiological splitting is most common in children and young adults. Delayed aortic closure by LBBB leads to reversed splitting of the S2. Exaggerated splitting occurs in RBBB. While fixed splitting occurs in atrial septal defect and pulmonary stenosis.

Third & Fourth Heart Sounds (S3 & S4) - These low frequency sounds occur early and late in diastole respectively. When present they give a characteristic 'gallop' cadence to the cardiac rhythm. Both sounds are best heard at the cardiac apex. They are caused by abrupt tensing of the ventricular walls following rapid diastolic filling. Rapid filling occurs early in diastole (S3) following atrioventricular valve opening and again late in diastole (S4) due to atrial contraction.

Characteristics of 3rd Heart Sound

●It is physiological in children and young adults and disappear after the age 40.

●It is generally pathological after 4o years of age. Usually occurs in left ventricular failure, cardiomyopathy and ischemic heart diseases.

● It also occurs in high output states caused by anemia, fever, pregnancy and thyrotoxicosis.

Characteristics of 4th Heart Sound

● It is sometimes physiological in elderly.

● Commonly it is pathological and occurs when vigorous atrial contraction late in diastole is required to augment filling of a hypertrophied non compliant ventricle.

● It occurs in long standing hypertension, hypertrophic cardiomyopathy, ischemic heart disease, atrial stenosis.

Other Heart Sounds

Opening Snap - This is heard midway between 2nd and 3rd heart sound in cases of mitral stenosis or tricuspid stenosis. It is high pitched loud snapping or clicking sharp sound due to sudden tensing of the cusps of mitral valve and tricuspid valve as it tries to open during early diastole. It is best heard just inside the apex beat. The interval between the onset of 2nd heart sound and the opening snap is good indicator to judge the severity of mitral stenosis. Shorter the 2 os interval, more severe is the mitral stenosis.

Systolic Ejection Clicks - They are high pitched click like sounds which come immediately after the first heart sound and are best heard in aortic or pulmonary areas. They are due to excessive ejection of blood from ventricles into the blood vessels. Pulmonary ejection clicks are best heard during inspiration. They result due to dilatation of the pulmonary artery, pulmonary stenosis, pulmonary hypertension. Aortic ejection clicks are transmitted to apical area. They occur in aortic stenosis, aortic regurgitation, aortic aneurysm, coarctation of the aorta, hypertension.

Murmurs - These are caused by turbulent flow within the heart and great vessels and may indicate valve disease. Heart murmurs defined by loudness (Low-medium - high pitched), quality (rumbling, blowing), location, radiation and timing (systolic or diastolic). Murmurs may occur without underlying heart disease. Innocent murmur of this type usually reflects hyperkinetic circulation in conditions such as anemia, fever, pregnancy and thyrotoxicosis. The murmur of aortic stenosis is loudest at the right sternal edge 2nd intercostal space and sometimes radiates to the carotids, it is termed ejection systolic because of its increasing and then decreasing volume in systole. The murmur of mitral regurgitation is loudest at the apex beat and is termed pansystolic because it is of equal volume throughout systole. The murmur of mitral stenosis occurs over the apex beat during the end of diastole, and is "rumbling" in character.

Pericardial Rub - It is high pitched scratching noise audible during any part of the cardiac cycle and over any part of the left precordium. This caused by the slashing movements imparted by the heart beat to the exudates within the pericardial sac.

Observations & Results

Disease Condition & Type of Sound

Sr.	Disease Condition	Type of Sound
1	*Shwasa* (Tachyapnea)	*Bhastrika Dhmanwat* (like blowing in fire pot)
2	*Kasa* (Cough)	*Bhinna Kansya Tulya* (like striking on bronze pot)
3	*Hikka* (Hiccup)	*Hik Hik*
4	*Tamak shwasa* (Bronchial Asthma)	*Kapot Eva Koojanam* (Loud wheezing resembling the sound of pigeons)
5	*Apatantraka* and *Apatanaka* (Tetanus)	*Kapot Eva Koojanam* (Loud wheezing resembling the sound of pigeons)
6	*Maha Shwasa* (Kussmaul's breathing)	*Matta Vrushabh Eva* (Noisy respiration like that of angry bull)
6	*Krukkaj Kasa* (whooping cough)	Whoop whoop like sound
7	*Swarabheda* (Laryngeal Disease)	*Gardabha wat swara* (Donkey like hoarseness of voice)
8	*Pandu* (Anemia)	*Hritdrava - Eti Dad Dadika* (Palpitations)
9	*Sandhivata* (Osteoarthritis)	*Sandhi Aatopa* (joint crepitation)
10	*Alasaka* (Gastroparesis)	*Udara Koojana* (Abdominal gurgling)
11	*Sangrahani & Ghati Yantra* (IBS)	*Antra* Koojana (Abdominal gurgling)
12	*Vakastambha* (Tongue paralysis)	*Minminitva* (Nasal speech) and *Gadgadatva* (Spastic speech)
13	*Ardita* (Facial Palsy)	*Vaksanga* (dysarthria)
14	*Swar upghat karak asadhya galganda* (myxoedema)	*Swarabheda* (change of voice)
15	*Vrudhhasya Swarbheda* (chronic atrophic laryngitis)	*Swarbheda* (Change of voice in old peoples)
16	*Swaraghna* (Laryngeal Malignancy)	*Gardabha wat swara* (Donkey hoarseness of voice)

Lung Sounds

Sr. No.	Lung sounds	Lung Condition
1	Bronchial breathing	Lung consolidation
2	Bronchophony	Lung consolidation
3	Aegophony	Lung consolidation with Pleural effusion

4	Whispering Pectrolioqye	Lung consolidation
5	Fixed monophonic wheezes	Incomplete obstruction of principle or lobar bronchus by tumour or foreign body
6	Random monophonic wheezes	widespread airflow obstruction (Asthma)
7	Sequential inspiratory wheezes	pulmonary fibrotic conditions
8	Expiratory polyphonic wheezes	widespread air flow obstruction
9	Late inspiratory crackles	Fibrosing alveolitis, resolving lobar pneumonia and interstitial pulmonary edema (due to cardiac failure)
10	Early inspiratory and expiratory crackles	widespread airflow obstruction
11	Stridor	Tracheal stenosis. Whooping cough.
12	Gurgling	Alveolar cell carcinoma, Infected purulent secretion of acute or chronic bronchitis or bronchiectasis or due to transudated fluid entering the airways from the alveoli as in pulmonary edema

Heart Sounds

Sr. No.	Heart sounds	Heart Conditions
1	3rd Heart sound	Physiological in children and young adults. left ventricular failure, cardiomyopathy and ischemic heart diseases. High output states like anemia, fever, pregnancy and thyrotoxicosis
2	4th Heart sound	hypertension, hypertrophic cardiomyopathy, ischemic heart disease, atrial stenosis.
3	Opening Snap	Mitral stenosis or tricuspid stenosis
4	Systolic ejection clicks	pulmonary stenosis, pulmonary hypertension, aortic stenosis, aortic regurgitation, aortic aneurysm, coarctation of the aorta, hypertension
5	Pansystolic Murmur	Mitral & Tricuspid regurgitation, VSD (Blowing)
6	Mid diastolic Murmur	Mitral & Tricuspid Stenosis (Rumbling), ASD
7	Ejection Mid systolic Murmur	Aortic & Pulmonary stenosis (Very loud)
8	Early diastolic Murmurs	Aortic & Pulmonary regurgitation (high pitched)
9	Murmurs may occur without underlying heart disease	Anemia, fever, pregnancy and thyrotoxicosis
10	Pericardial Rub	Pericardial effusion

Summary & Conclusion

1. The concept of sound examination is very well documented in ancient Indian medical science under Shrawan Pariksha.

2. The sound examination is helpful in making the diagnosis of some of the diseases related respiratory and cardiovascular and gastrointestinal system.

3. The sound amplifying instruments like stethoscope is very useful in pinpoint diagnosis of the underlying pathological conditions of respiratory and cardiovascular and gastrointestinal system.

Bibliography

1. Laxmipati S. *Yoga Ratnakara of Nyaychandrashekhar*, Roginam Ashtasthanan Nirikshanam. 7th ed. Chaukhamba Publications; 2002.

2. Vd. Atrideva. *Sushruta Samhita* of acharya Sushruta, Sutrasthana 10/5 hindi translation. 5th ed. Motilal Banarasidas; 1975.

3. Yadavji T. *Charak Samhita* of acharya Agnivesha and Charaka with 'Ayurved Dipika' sanskrit commentary by Chakrapani, Vimansthana 4/7. Chaukhamba Publication, Gopal Mandir lane; 2007.

4. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 12/15. 20th ed. Chaukhamba Surbharati; 1993.

5. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 11/2. 20th ed. Chaukhamba Surbharati; 1993.

6. Vd. Atrideva. *Sushruta.Samhita* of acharya Sushruta, Uttartantra 41/19, hindi translation. 5th ed. Motilal Banarasidas; 1975.

7. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 11/11. 20th ed. Chaukhamba Surbharati; 1993.

8. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 12/28. 20th ed. Chaukhamba Surbharati; 1993.

9. Acharya VS & Ravidutta Tripathi. '*Charaksamhita* of acharya Charak and Agnivesha, Chikitsasthana 17/46, hindi translation. 1st ed. Chaukhamba Sanskrit Pratishthan; 2019.

10. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 13/2. 20th ed. Chaukhamba Surbharati; 1993.

11. Vd. Atrideva. *Sushruta Samhita* of acharya Sushruta, Uttartantra 53/6, hindi translation. 5th ed. Motilal Banarasidas; 1975.

12. Vd. Atrideva. *Sushruta Samhita* of acharya Sushruta, sharirsthana, Sharirsthana 6/27, hindi translation. 5th ed. Motilal Banarasidas; 1975.

13. Acharya VS & Ravidutta T. '*Charaksamhita* of acharya Charak and Agnivesha, Chikitsasthana 16/12, hindi translation. 1st ed. Chaukhamba Sanskrit Pratishthan.

14. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit , 4/17. 20th ed. Chaukhamba Surbharati Publication; 1993.

15. Vd. Atrideva. *Sushruta Samhita* of acharya Sushruta, Nidansthana 1/88, hindi translation. 5th ed. Motilal Banarasidas; 1975.

16. Sudarshanshastri BN & Upadhyaya. *Madhav Nidan* of Madhavakara with 'Atank Darpan commentary by Vachaspati Mishra and 'Madhukosh' commentary by Vijayrakshit, 22/30. 20th ed. Chaukhamba Surbharati; 1993.

17. Kaviraj BS. *Ayurved Vijnana*. Vo. 1, Sutrasthan 49. Vasu Publications; 2012.

18. Paul F. *Lung Sounds*. Jaypee Brothers; 1988.

19. Mehata PJ. *Practical Medicine*. 12th ed. P. J. Mehata, HUF, 64.

20. Praveen K & Michael C. *Clinical Medicine*. 3rd ed. Bailliere Tindal, 24-28, Oval Road, London (UK).