

**Summer Training at
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Doctors Preference for Dry and Wet Cough Syrups

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Certificate

This is to certify that Mahaveer Prasad Bansal has undergone summer training in Abbott Health Care Pvt. Ltd. Jaipur from 1 may to 15 June, 2012.

The candidate carried out all the studies related to summer training himself. His approach to the studies has been sincere, scientific, and analytical. This summer training in partial fulfillment of the course requirement is recommended for the award of Post Graduate Diploma in pharmaceutical Management.

I wish his success in all future endeavors.

Dr .P. R.Sodani

(Dean Academics and student affairs)

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Mahaveer Prasad Bansal

PGDPM-03

IIHMR

COMPANY PROFILE:

Abbott Healthcare Pvt. Ltd. is one of the largest privately held pharmaceutical companies in India. Abbott Laboratories (Abbott) is a global healthcare company. It undertakes the discovery, development, manufacture, and sale of a broad and diversified line of healthcare products along with pharmaceuticals, diagnostics, vascular and nutritional products. The company's diverse family of pharmaceutical, medical, and nutritional products includes a wide range of specialized medicines; medical diagnostic instruments and tests; minimally invasive surgical devices; a range of nutritional supplements for infants, children and adults; and products for veterinary care. Its research and development, manufacturing and administrative facilities are located in more than 100 countries worldwide. Abbott envisages building its position in the marketplace through new product launches, network expansion, internal development, in-licensing of technology and products, acquisitions and strategic alliances. The company markets its products through its own sales offices and distributors in over 130 countries globally.

Abbott healthcare Limited provides healthcare solutions through its four business units:

1. Primary Care, which markets products in the areas of Pain Management, Gastroenterology, with well-known brands like Brufen, Digene, Cremaffin.
2. Specialty Care – Metabolic & Urology provides solutions in the areas of Thyroid, Obesity, Diabetes and Benign Prostratic Hyperplasia.
3. Specialty Care - Neuroscience has a varied portfolio, with specialty products in the Neurology and Psychiatric segments.
4. Hospital Care, offers products in the field of anaesthesiology and neonatology namely Forane, Sevorane and Survanta.

The Research arm of Abbott Healthcare Private Limited abbreviated as Pharmaceutical R&D is situated at Goregaon (E) and Mumbai. It is actively involved in New Product and Packaging Development. The R&D centre has in the past 5 years successfully scaled up and commercialized many branded generics, some of which are premium brands on the market. Anticipating the growing need for Innovation, activities were initiated on the drug delivery front, with some of the new platforms have now reached advanced stages of development and will come up for launch. The centre is now focused on development of innovative products and new platforms that are unique and offers benefits to the patient at large.

The Team - The center enjoys a culture that is conducive for research and has a team of dedicated scientist such as formulators, analysts, and packaging experts and is also supported by other functions. The team has filed several patent applications on the new platforms including some design registrations and packaging innovations. It is a center for excellence for the scientist to be creative and convert innovative ideas into realities.

Vision

To be the world's premier health care company.

Basic Principle

Respect people: Our people are our strength.

Strategy

Value Based Management is our integral philosophy, directed towards maximizing long-term cash flow and shareholder value through:

- Focus on the Company's core profitable segments to build up our position as one of the leading pharmaceutical companies;
- Investments in information technology to improve planning and control of operation;
- Increased investments in Human Resources Training & Development to upgrade and broaden the skill base of the organization in consonance with changing needs;
- Build flexible cost-efficient manufacturing base through a balanced mix of in-house and contract manufacturing.

Products-

Power brands- A strong culture of brand building at Abbott Healthcare Pvt. Ltd. and unmatched sales and marketing coverage has seen of our power brands make it to amongst the top 300 in the Indian pharmaceutical market as Phensedyl, Tossex, Paraxin, kenacort, Pentids, Tixylix etc.

The formulation facility of Abbott Healthcare Private Limited is situated in the Baddi (Himachal Pradesh).

The manufacturing locations are designed to produce quality, high volume formulations using cost efficient processes. The plant has well equipped laboratories and trained personnel to ensure international standards of quality at each step of the manufacturing process.

Executive summary

Cough is a symptom of most acute respiratory infections including both upper respiratory infections (URI), such as coughs and the more serious lower respiratory infections (LRI) such as pneumonia, bronchitis and bronchiolitis.

Coughing is an unpleasant and distressing symptom and hence chronic coughing is associated with significant effects on quality of life. This condition is frequently encountered by physician, chest physician and other specialist. The management of this condition requires a good understanding of the causes the cough, as well as the variety of treatments available.

The study summarizes treatment of cough according to the patient disease profile and various combinations which are used for the both types of cough. A wide range of cough syrups brands are available in the market which have a major proportion in cough treatment. This research attempts to include the market sale, different brands availability, and doctor's views when a new product is launched in market. It also analyses the position of two major cough syrup brand of Abbott health care having dominant market in India.

INTRODUCTION:

Cough is a protective reflex, its purpose being expulsion of respiratory secretions or foreign particles from air passages. It occurs due to stimulation of mechano or chemoreceptors in throat, respiratory passages or stretch receptors in the lungs.

Cough may be useful or useless. Useless (non-productive) cough or dry cough should be suppressed. Useful (productive) cough or wet cough serves to drain the airways, its suppression is not desirable. Cough is beneficial for expelling all the dust particles that enter into the respiratory tract. However, when cough become severe due to any inflammation in the respiratory tract or in the lungs, it is necessary to treat with some drugs, such as Mucolytics, antiasthmatics or any expectorant. Cough is a symptom of most acute respiratory infections (ARI) including both upper respiratory infections (URI), such as coughs and colds (also known as the common cold, coryza, acute naso-pharyngitis or acute pharyngorhinitis), and the more serious lower respiratory infections (LRI) such as pneumonia, bronchitis and bronchiolitis.

Medicines for the symptoms of upper respiratory infections are sought both for the relief of discomfort. Cough can be a symptom of upper or lower respiratory tract infection or may be a consequence of a non-infectious condition such as asthma, exposure to cigarette smoke, or aspiration of a foreign body.

Productive Coughs/ Wet Cough-

A productive cough produces phlegm or mucus (sputum). The mucus may have drained down the back of the throat from the nose or sinuses or may have come up from the lungs. A productive cough generally should not be suppressed-it clears mucus from the lungs. There are many causes of a productive cough, such as:

- Viral illnesses. It is normal to have a productive cough when you have a common cold. Coughing is often triggered by mucus that drains down the back of the throat.
- Infections. An infection of the lungs or upper airway passages can cause a cough. A productive cough may be a symptom of pneumonia, bronchitis, sinusitis, or tuberculosis.
- Chronic lung disease. A productive cough could be a sign that a disease such as chronic obstructive pulmonary disease (COPD) is getting worse or that you have an infection.
- Stomach acid backing up into the esophagus. This type of coughing may be a symptom of gastroesophageal reflux disease (GERD) and may awaken you from sleep.
- Smoking or other tobacco use. Productive cough in a person who smokes or uses other forms of tobacco is often a sign of lung damage or irritation of the throat or esophagus.

Nonproductive Coughs / Dry Cough-

A nonproductive cough is dry and does not produce sputum. A dry, hacking cough may develop toward the end of a cold or after exposure to an irritant, such as dust or smoke. There are many causes of a nonproductive cough such as:

- Viral illnesses. After a common cold, a dry cough may last several weeks longer than other symptoms and often gets worse at night.
- Bronchospasm. A nonproductive cough, particularly at night, may mean spasms in the bronchial tubes (bronchospasm) caused by irritation.
- Allergies. Frequent sneezing is also a common symptom of allergic rhinitis.
- Exposure to dust, fumes, and chemicals in the work environment.
- Asthma. A chronic dry cough may be a sign of mild asthma. Other symptoms may include wheezing, shortness of breath, or a feeling of tightness in the chest.

4.2. Classification of Drugs and Remedies used for treatment of cough and cold-

4.2.1. Antitussive agents

4.2.1.1 Centrally-Acting Cough Suppressants

4.2.1.1.1 Opiate derivatives

Codeine

Hydrocodone

Noscapine

Pholcodine

4.2.1.1.2 Dextromethorphan

4.2.1.2. Peripherally Acting Cough Suppressants

Non-narcotics

Carbentapentane

Chlophedianol hydrochloride

Benzonatate, Carmiphen

4.2.1.3 Aromatic Topical Antitussives (for external rub)

Camphor

Menthol

Eucalyptol/Eucalyptus oil

Thymol

Turpentine

4.2.2. Clearing Thick Sputum

4.2.2.1 Expectorants

Ammonium chloride

Benzoin preparations

Guaifensin (glycerol guaiacolate)

Ipecacuanha (ipecac)

Potassium iodide

Sodium citrate

Tolu balsam

4.2.2.2 Mucolytic Drugs

Acetylcysteine

Bromhexine

Carbocysteine

Ambroxol

4.2.2.3 Mist Therapy

4.2.3. Relief of Nasal Congestion and other cold symptoms

4.2.3.1 Sympathomimetics

3.1.1 Topical (nasal drops or spray)

Phenylamines:

Desoxephedrine

Ephedrine

Phenylephrine

Imidazole derivatives:

Naphazoline

Oxymetazoline

3.1.2 Oral:

Ephedrine (adrenaline)
Phenylephrine
Phenylpropanolamine
Pseudoephedrine

4.2.3.2 Antihistamines

4.2.3.2.1 First generation

Alkylamines:

Brompheniramine maleate
Chlorpheniramine maleate
Pheniramine maleate
Tripolidine hydrochloride

Ethanolamines:

Diaphenhydramine
Diphenylpyraline
Doxylamine

Ethylenediamines:

Methapyrilene
Pyrilamine maleate
Thonzylamine hydrochloride

Phenothiazines:

Chlorpromazine
Promethazine
Trimeprazine

Piperazine:

Cyclizine
Meclizine

4.2.3.2.2 Second generation:

Astemizole
Terfenadine
Clemastine
Loratidine
Azelastine

4.2.4. Anticholinergics:

Atropine
Belladonna
Ipratropium
Scopolamine

4.2.5. Saline Nose Drops

4.2.6. Hot fluids

4.2.7 Demulcent or Soothing remedies (syrups and lozenges)-

Linctus-
Tea with Honey and Lemon
Eucalyptus
Ginger, Menthol

4.3 Treatment of cough-

4.3.1. Antitussive agents

1.1 Centrally acting cough suppressants

1.1 Codeine and other opiate derivatives-

Codeine, an opioid chemically related to morphine, acts on the cough centre of the medulla to depress the cough reflex, perhaps by increasing the cough threshold. Like other opioids, codeine has analgesic and sedative properties, but its action as an antitussive is achieved at lower doses than its analgesic and sedative effects. Codeine, which has a half-life in the plasma of 2–4 hours, is metabolized by the liver and excreted in the urine, mostly in inactive forms. However, about 10% is demethylated to form morphine, which may be the active form of the drug. Young infants are more susceptible to codeine intoxication due to their immature hepatic glucuronidation system. Codeine is available in the sulfate and phosphate forms. It is sold alone in the form of syrup and capsules or tablets, or in combination with other medicines. (e.g. noscapine, hydrocodone, pholcodine)

Side-effects of codeine- Adverse reactions to codeine include nausea and vomiting, constipation, palpitations and dizziness. After large doses, patient may experience somnolence, rash, miosis (i.e. excessive constriction of the pupil of the eye), vomiting, itching, ataxia, and swelling of the skin. Respiratory failure leading to death has also been associated. Prolonged ingestion of codeine can produce a state of narcotic dependency, and the drug may be subject to abuse. Codeine preparations should not be recommended for the treatment of cough in young children.

1.2 Dextromethorphan-

Although dextromethorphan is structurally related to morphine and codeine, it does not share their analgesic properties and has little sedative effect. Like codeine, dextromethorphan acts centrally on the cough centre in the medulla to elevate the threshold for coughing. The safe dose range seems to be considerably higher for dextromethorphan than for codeine. Dextromethorphan is rapidly absorbed from the gastrointestinal tract. Its antitussive effect persists for up to 6 hours. Like codeine, it is metabolized in the liver and excreted in the urine, both unchanged and with demethylated metabolites.

Side-effects of dextromethorphan.-Untoward effects of dextromethorphan include dizziness and gastrointestinal disturbances. Like codeine, it can cause histamine release in sensitive individuals. In general, its toxicity is low. However at high doses, dextromethorphan can cause central nervous system depression.

1.3 Antihistamines for cough-

“Classical” antihistamines, now referred to as H₁-receptor inhibitors, resemble histamine in structure and competitively inhibit the physiological effects of histamine stimulation at receptor sites. In addition to their use as anti-allergy drugs, H₁-receptor antagonists often have anti-emetic, sedative and anticholinergic properties. Antihistamines are added to many cough and cold remedies as both antitussives and to treat rhinorrhoea and nasal congestion.

Although some antihistamines may have an antitussive action, their clinical efficacy has not been well documented. Antihistamines do not appear to have any direct antitussive effect, but it has been proposed that they may act indirectly by reducing postnasal drip.

Side-effects of antihistamine drugs-Because histamine is similar in structure to biogenic amines such as acetylcholine, adrenaline and serotonin, it is not surprising that antihistamines may block the receptors of these other amines. For this reason, antihistamines exhibit anticholinergic activity and occasionally adrenoceptor blocking activity.

Side-effects of antihistamines include central nervous system stimulation, extrapyramidal symptoms, antimuscarinic effects, and gastrointestinal disturbances. The anticholinergic (atropine-like) action of antihistamines frequently causes a drying sensation in the throat and nasal passages and may result in thickening of bronchial secretions.

Antihistamines also cause drowsiness, and diphenhydramine, the most sedating of the antihistamines, is used in non-prescription sleeping medications. Paradoxical central nervous system stimulation has been found with irritability, insomnia, tremors, and occasionally convulsions. Paradoxical stimulation is occasionally seen with therapeutic doses, but occurs more often in drug overdose promethazine and a phenothiazine used as an antihistamine, may enhance sleep apnoea in infants and may contribute to sudden infant death syndrome.

2. Soothing remedies (syrups) for cough-

A demulcent is a liquid which coats the throat and soothes irritated mucous membranes. These preparations may help reduce coughing associated with a dry throat and are soothing to many patients. Demulcents consist primarily of sugar. They may act by increasing saliva production and swallowing, thereby interfering with the cough reflex, or by coating the peripheral sensory receptors that trigger the cough. Soothing substances such as hot tea with honey and lemon, a syrup, or glycerol are harmless and inexpensive.

Side-effects of syrups - Some cough syrups contain as much as 40% alcohol, similar to the alcohol concentration of whisky. Alcohol may suppress the cough reflex by sedating the patient. Soothing (demulcent) syrups are cheap, popular and safe. Alcohol containing syrups should never be used. However, simple, inexpensive syrups without alcohol may soothe the throat and can be recommended to provide some relief from cough.

2. Clearing thick sputum-

2.1 Expectorants-

These are often prescribed to patients with a dry cough who complain that they cannot cough up mucus from their lungs. They may act indirectly by stimulating efferent vagal nerve fibres to bronchial glands, resulting in increased volume of bronchial secretions. Because vagal stimulation also irritates the gastric mucosa, large doses of expectorants such as guaifensin, ipecac, terpin hydrate, and ammonium chloride will cause nausea and vomiting. Expectorants such as guaifensin and potassium iodide act directly on bronchial glands to stimulate mucus production. Potassium iodide may also act as a mucolytic agent by breaking down mucoproteins and stimulating ciliary activity. Expectorants are generally sold in combination with decongestants, antihistamines, bronchodilators and antitussives.

Side-effects of expectorants- The physiological response to an expectorant is affected by the person's general condition, state of hydration, condition of the respiratory tract, and by other drugs ingested with the expectorant.

Large doses of expectorants irritate the gastric mucosa and may produce nausea and vomiting. Iodides can cause iodine reactions (skin eruptions, hypersensitivity reactions with angioedema, pulmonary oedema) in sensitive persons. Since iodides are taken up by the salivary and lacrimal glands as well as mucus cells, expectoration may be associated with rhinorrhoea, salivation and lacrimation. Ammonium chloride is converted to urea in the liver, causing a metabolic acidosis and a mild diuresis (in larger doses it is used to treat metabolic alkalosis). Terpin hydrate elixir preparations have a high alcohol content and therefore a potential for intoxication and abuse. Chloroform was once widely used as an ingredient in

cough syrups and other pharmaceutical products, but has been banned in over a dozen countries because of concerns about hepatotoxicity and carcinogenicity.

2.2 Mucolytic drugs-

These include drugs containing a free thiol group, such as N-acetylcysteine, which work by breaking sulfhydryl bonds and directly thinning the sputum. Mucolytic agents are often administered by mouth or by inhalation to persons with chronic respiratory conditions characterized by excess mucus production, such as cystic fibrosis and chronic bronchitis. Although mucolytics alter sputum viscosity and may lead to subjective improvement in these patients, their use has not resulted in any consistent improvement in pulmonary function.

Side-effects of mucolytic drugs- Adverse effects reported following oral administration of acetylcysteine include bronchospasm, gastrointestinal disturbances and fever. Some antibiotics, including ampicillin, erythromycin, and some tetracyclines are physically incompatible with or may be inactivated by acetylcysteine.

2.3 Oral hydration and mist therapy-

Water and water vapour can promote expectoration of sputum, but opinions differ about its effect on the tissues of the respiratory tract. Some authors claim that water vapour acts as a mucolytic, and has a soothing action on the respiratory mucosa. Others, however, state that water is not readily incorporated into mucus when it is administered by inhalation, and that it may promote expectoration by an irritant action on the respiratory mucosa.

3. Relief of nasal congestion and other cold symptoms

3.1 Sympathomimetic drugs-

Most decongestants contain sympathomimetics in oral or topical form (drops and sprays) to reduce the swelling of the nasal mucosa and promote easier breathing. The decrease in blood flow and oedema presumably decreases nasal discharge as well.

3.1.1 Topical sympathomimetic drugs-

Sympathomimetic agents imitate the actions produced by stimulation of postganglionic sympathetic or adrenergic nerves. These include stimulation of the heart and central nervous system, constriction of blood vessels supplying the skin and mucus membranes, and dilation of the bronchi.

Sympathetic agents may act directly on adrenergic receptors, or indirectly by releasing stored norepinephrine from nerve endings. Some drugs such as ephedrine are both direct and indirect in their actions). Topical sympathomimetic agents cause constriction of nasal blood vessels, thereby reducing mucosal swelling as Ephedrine, oxymetazoline, phenylephrine.

Side-effects of topical sympathomimetic drugs- Topical agents when used for more than 2 or 3 days can cause rhinitis medicamentosa, a rebound congestion of the nasal mucosa. Nasal congestion may be as severe as, or worse than, the original symptoms, which is of particular concern in young infants who are obligate nose breathers.

3.1.2 Orally administered sympathomimetic drugs-

Oral sympathomimetics, including phenylephrine, pseudoephedrine, oxymetazoline and phenylpropanolamine, cause systemic vasoconstriction, reducing the volume of blood circulated to the nasal mucosa. Pseudoephedrine is a stereoisomer of ephedrine. It is similar to ephedrine in its action, but appears to have a less marked effect on blood pressure, and fewer central nervous system effects.

Phenylephrine produces little central nervous stimulation, but increases the blood pressure, and is sometimes used as a pressor during anaesthesia. Phenylpropanolamine has an indirect action as a sympathomimetic. In addition to its use as a decongestant, it is an ingredient used in diet pills. It is structurally similar to amphetamine, a potent central nervous system stimulant.

Side-effects of orally administered sympathomimetic drugs- The adverse effects of sympathomimetics are essentially those of adrenergic stimulation. Psychic disturbances reported among children following phenylpropanolamine administration include irritability, sleep disturbances, hallucinations, and aggressiveness.

3.2 Antihistamine drugs-

The resemblance between cold symptoms and symptoms of allergic rhinitis led to the use of antihistamines for the common cold. Oral antihistamines may provide a modest degree of symptomatic relief of sneezing and nasal discharge in adults with the common cold. They are not effective in relieving nasal congestion or cough. Second-generation antihistamines have fewer anticholinergic side-effects, but do not have improved efficacy.

Side-effects of antihistamines - Promethazine, a phenothiazine antihistamine widely used for its anti-emetic and sedative properties, has been reported to cause agitation, hallucinations, seizures, dystonic reactions, sudden infant death syndrome, and apnoea.

3.3 Anticholinergic drug-

Anticholinergic agents decrease the production of saliva, as well as bronchial, nasal, gastric and intestinal secretions, and act as a bronchodilator. They include the tertiary ammonium compounds such as atropine sulphate and quaternary ammonium compounds such as ipratropium.

Side-effects of orally administered anticholinergics - Side-effects include dryness in the mouth and gastrointestinal mucosa, mydriasis, cycloplegia (paralysis of the ciliary muscle of the eye), photophobia, tachycardia and cardiac arrhythmias, dizziness, urinary urgency and constipation.

Saline nose drops-

Saline nose drops may be effective in softening dry or thick nasal mucus and clearing a blocked nose. An easy way to administer them is by moistening a wick in clean, salted water and using it to drip a few drops onto the nasal mucus. Exact recipes, elaborate preparations and eye droppers are not needed.

Side-effects of saline nose drops- If too large a volume of drops is administered by dropper, infants may choke due to aspiration.

OBJECTIVES OF THE STUDY

- To study the perception of doctor's towards the different combinations and brands of the cough syrups.
- To find out sale of cough syrups according to seasonality.
- To find out doctors preference whenever a new combination of cough syrup is launched in the market.

Research Methodology

Type of Research: -Descriptive research

Sample Area: - The interviews were conducted in S.M.S hospital, Santokabaduralabhji memorial hospital, Fortis hospital, Sanjivani hospital, Narayana Hrudayalaya hospital, Saket hospital, S.K. Soni hospital, Chest and TB hospital and most of the private clinics of doctors.

Type of data collected: - Primary Data

Primary data generally means those raw data or data structures that are collected “first hand” and have not had any previous meaningful interpretation. The collection of data was made through both observation and personal interviews with physician, chest physician, general physician and ENT of Jaipur.

Sample Size: - The total sample size was 50 doctors (20 physicians, 10 chest physician, 10 General Physician, 10 ENT doctors).

Tools (questionnaire):- A structured questionnaire was prepared containing both open and closed ended question. The questionnaire included questions pertaining to brand preferences and factors behind using these brands and roles of these brands.

After having information on the basis of these questionnaires it was easier to make a conclusion.

Methodology: - A structured questionnaire for the study of perception of Physicians, Chest Physicians, General Physician and ENT survey for dry and wet cough preparation according to data required.

Doctors were surveyed on the basis of designed questionnaire during field visit in Jaipur.

Sampling Characteristics:-

Target Population- The target population for the research were Physicians, chest Physicians, General Physicians ENT doctors of Jaipur (Rajasthan).

Sampling Techniques: - purposive sampling technique.

Q1.Average Patients /day-

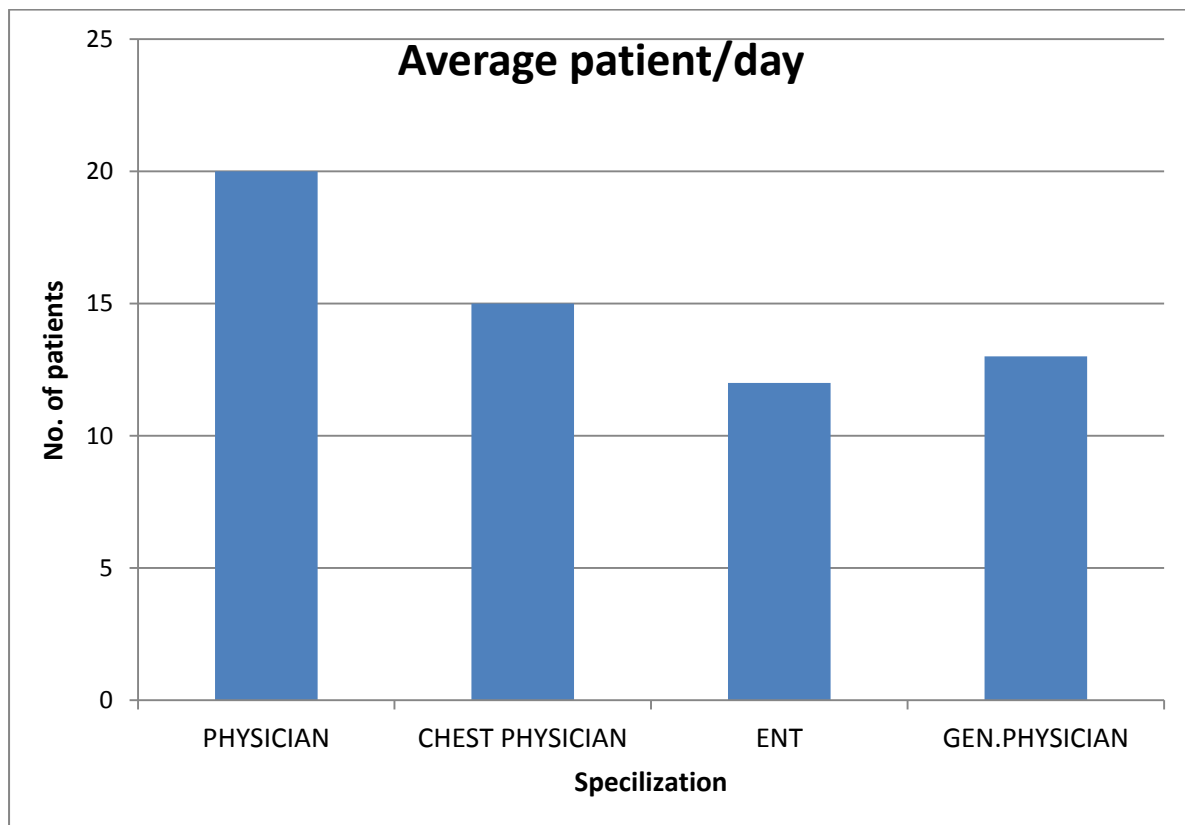


Figure no: -1

Specialization	Avg. Patients (per Day)
PHYSICIAN	20
CHEST PHYSICIAN	15
ENT	12
GEN.PHYSICIAN	13

Interpretation:-

- 20 Patient are examined by Physician, which is highest from other faculty of Doctors.
- ENT and General physician examined the patients which are near to the equal as 12 and 13.
- Chest physician examined 15 patients which are mainly concerned with the pulmonary diseases.

Q.2 Average no. of cough syrup prescribed by you quarterly?

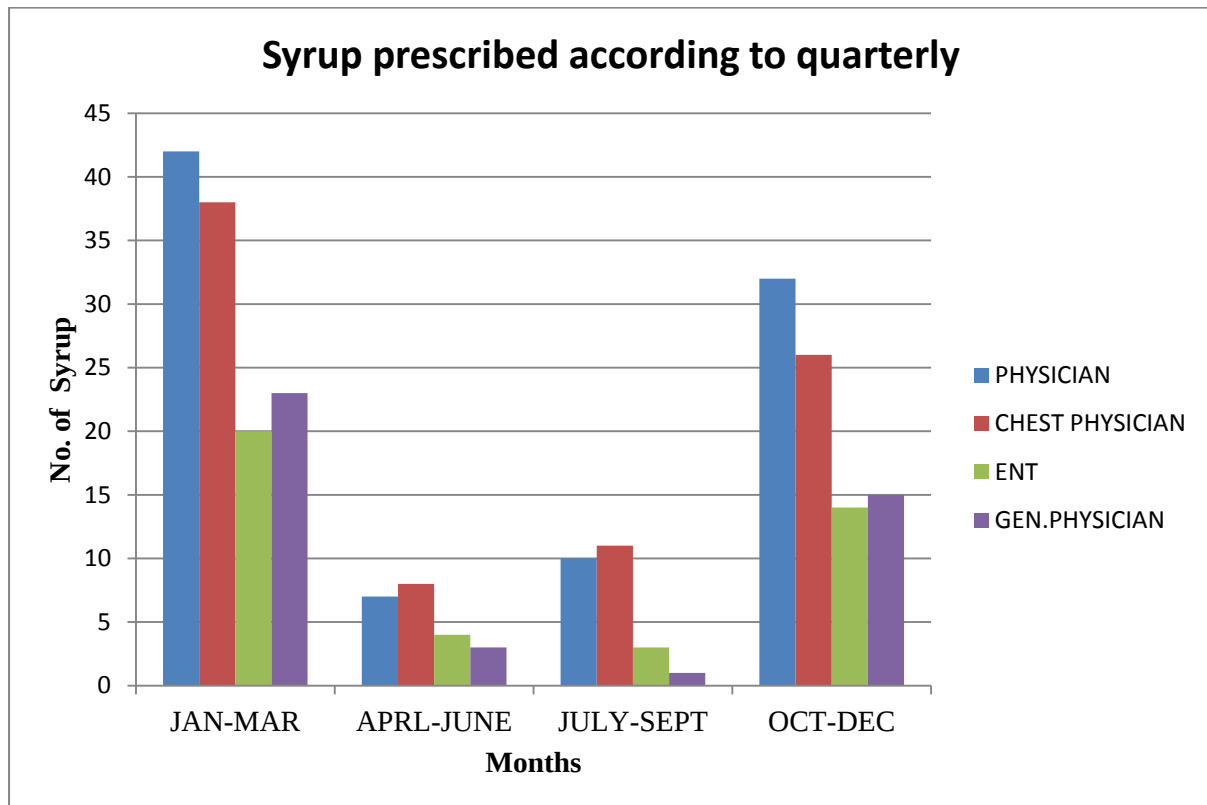


Figure no:-2

Specialization	JAN-MAR	APRL-JUNE	JULY-SEPT	OCT-DEC
PHYSICIAN	42	7	10	32
CHEST PHYSICIAN	38	8	11	26
ENT	20	4	3	14
GEN.PHYSICIAN	23	3	1	15
Total -	123	22	35	87

Interpretation:-

- From the above table it can be seen that maximum sale of cough syrups was in the month of January-March and minimum sale of cough syrups was in month of April-June and July- September. Moderate sale was found in the month of October-December.

Q3.which type of Combination do you mostly prescribe for the Dry Cough?

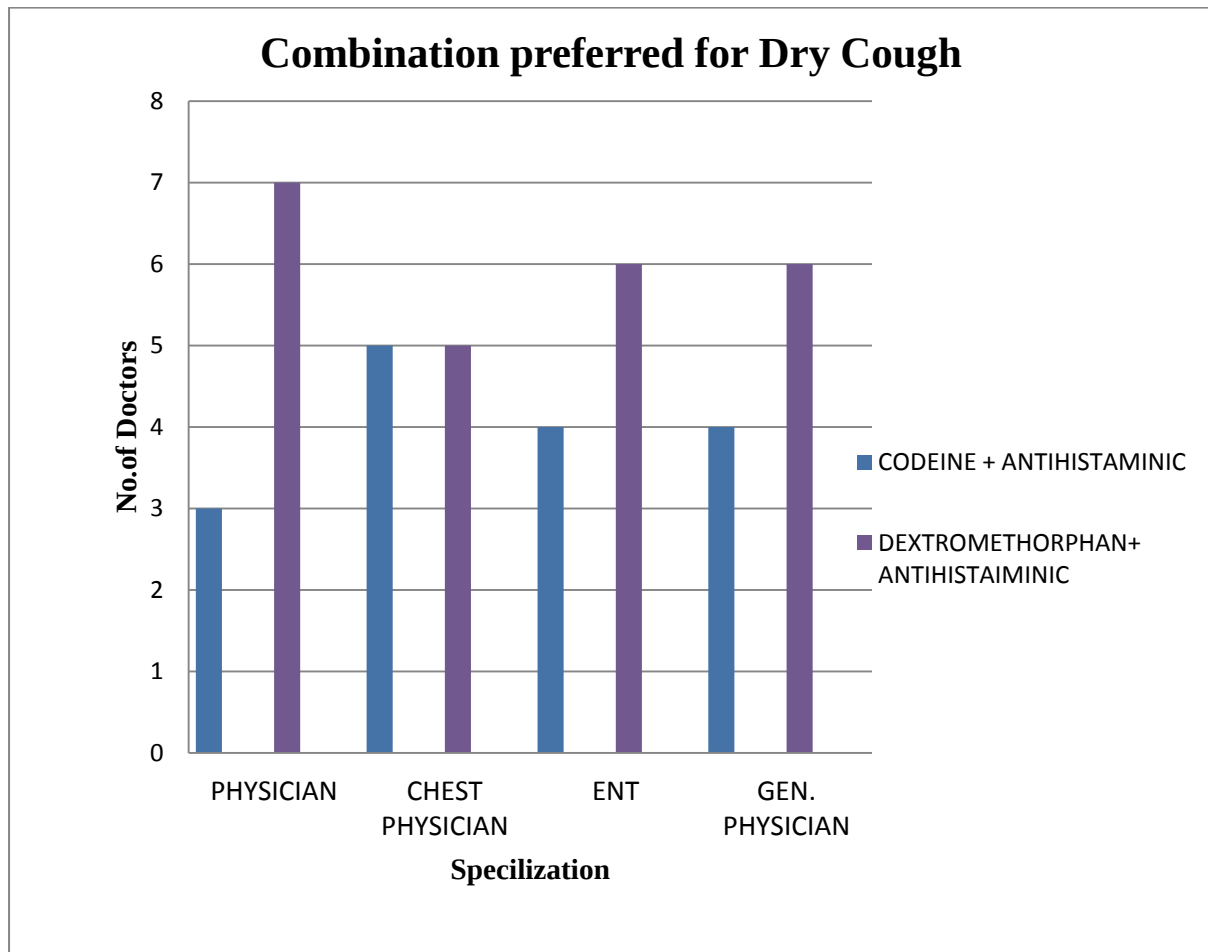


Figure no:-3

Specialization	Codeine + Antihistaminic	Dextromethorphan + Antihistaminic
PHYSICIAN	3	7
CHEST PHYSICIAN	5	5
ENT	4	6
GEN.PHYSICIAN	4	6

Interpretation:-

- From the above table it can be seen that Dextromethorphan + Antihistaminic combinations syrup were the preferred choice amongst all the doctors.

Q4. Which syrup brands do you prefer mostly for Dry Cough?

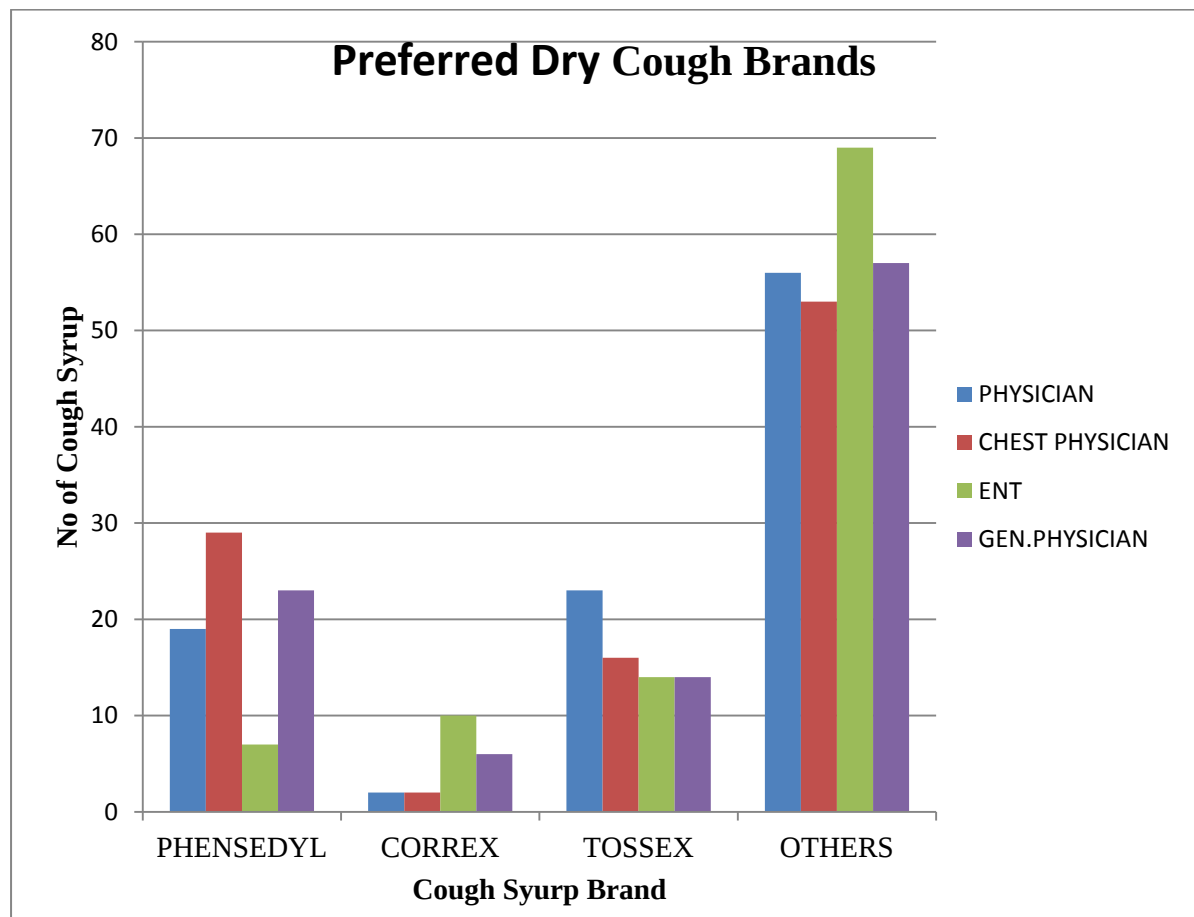


Figure no: - 4

Specialization	PHENSEDYL	CORREX	TOSSEX	OTHERS
PHYSICIAN	19	2	23	56
CHEST PHYSICIAN	29	2	16	53
ENT	7	10	14	69
GENRAL PHYSICIAN	23	6	14	57

Interpretation:-

- From the above table, Phensedyl and Tossex were the syrup of choice for dry cough by majority of doctors.

Q5. Which type of combination do you mostly prescribe for the wet Cough?

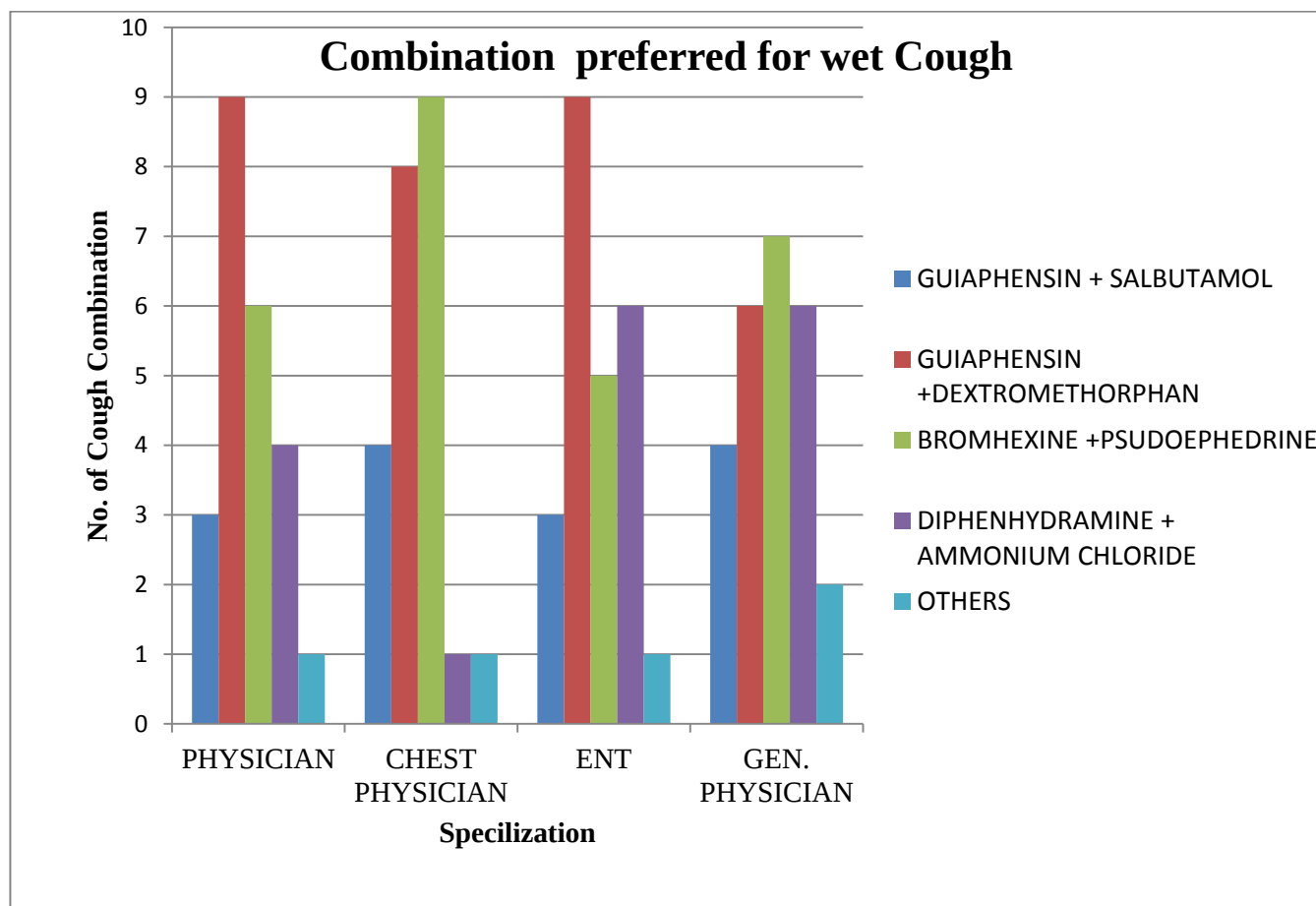


Figure no :- 5

Specialization	GUIPHENSIN+ SALBUTAMOL	GUIPHENSIN+ DEXTROMETHORPHAN	BROMHEXINE+ PSUEDOEPHEDRINE	DIPHENHYDRAMINE +AMMO. CHLORIDE
PHYSICIAN	3	9	6	4
CHEST PHYSICIAN	4	8	9	1
ENT	3	9	5	6
GENERAL PHYSICIAN	4	6	7	6

Interpretation:-

- From the above table it can be seen that Guiphensin + Dextromethorphan syrup combination was choice of the drug for the wet cough by majority of doctors.

Q6. Which brand do you mostly prefer for Wet Cough?

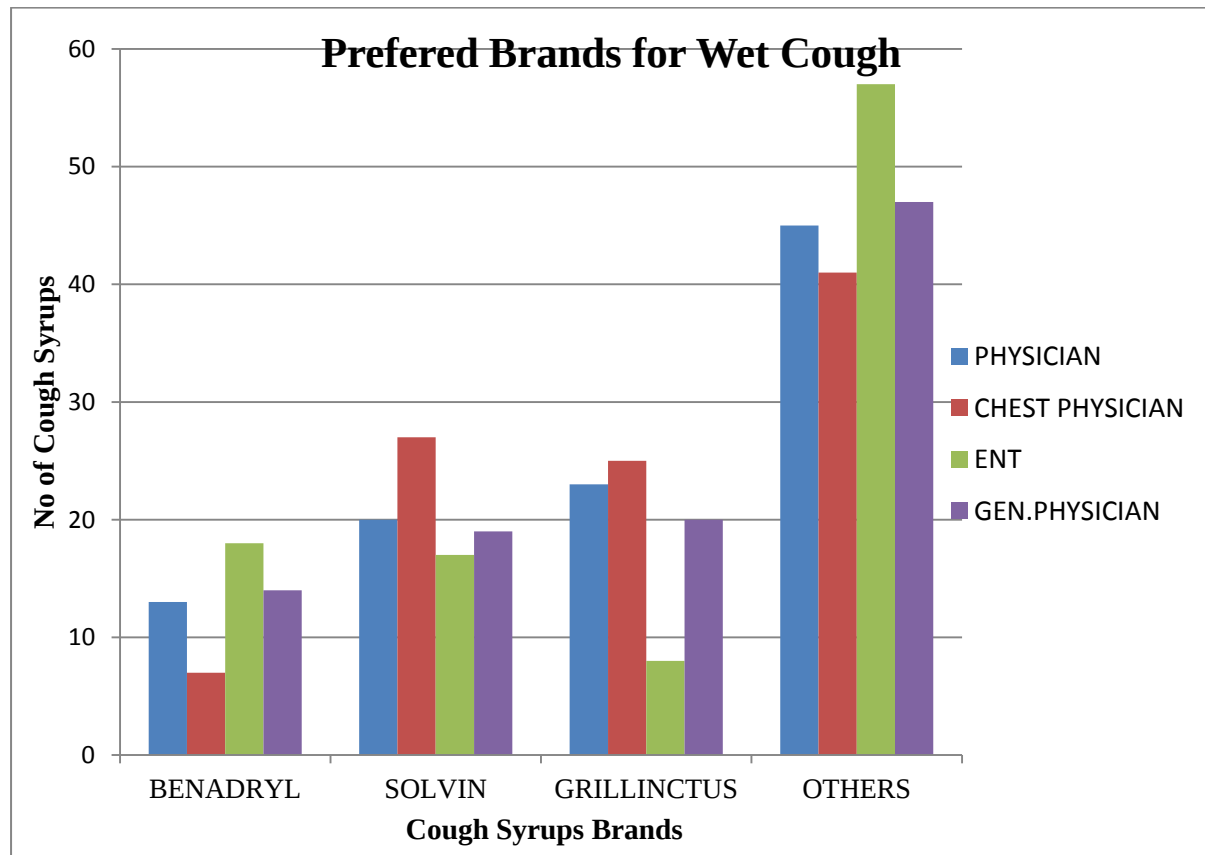


Figure no: - 6

SPECILIZATION	BENADRYL	SOLVIN	GRILLINCTUS	OTHERS
PHYSICIAN	13	20	23	45
CHEST PHYSICIAN	7	27	25	41
ENT	18	17	8	57
GEN. PHYSICIAN	14	19	20	47

Interpretation:-

- From the above table, Grillinctus and Solvin were the brand of choice among all the brand for the wet cough.

Q7.Whenever a new cough syrup is Launched, What is your response while adopting it?

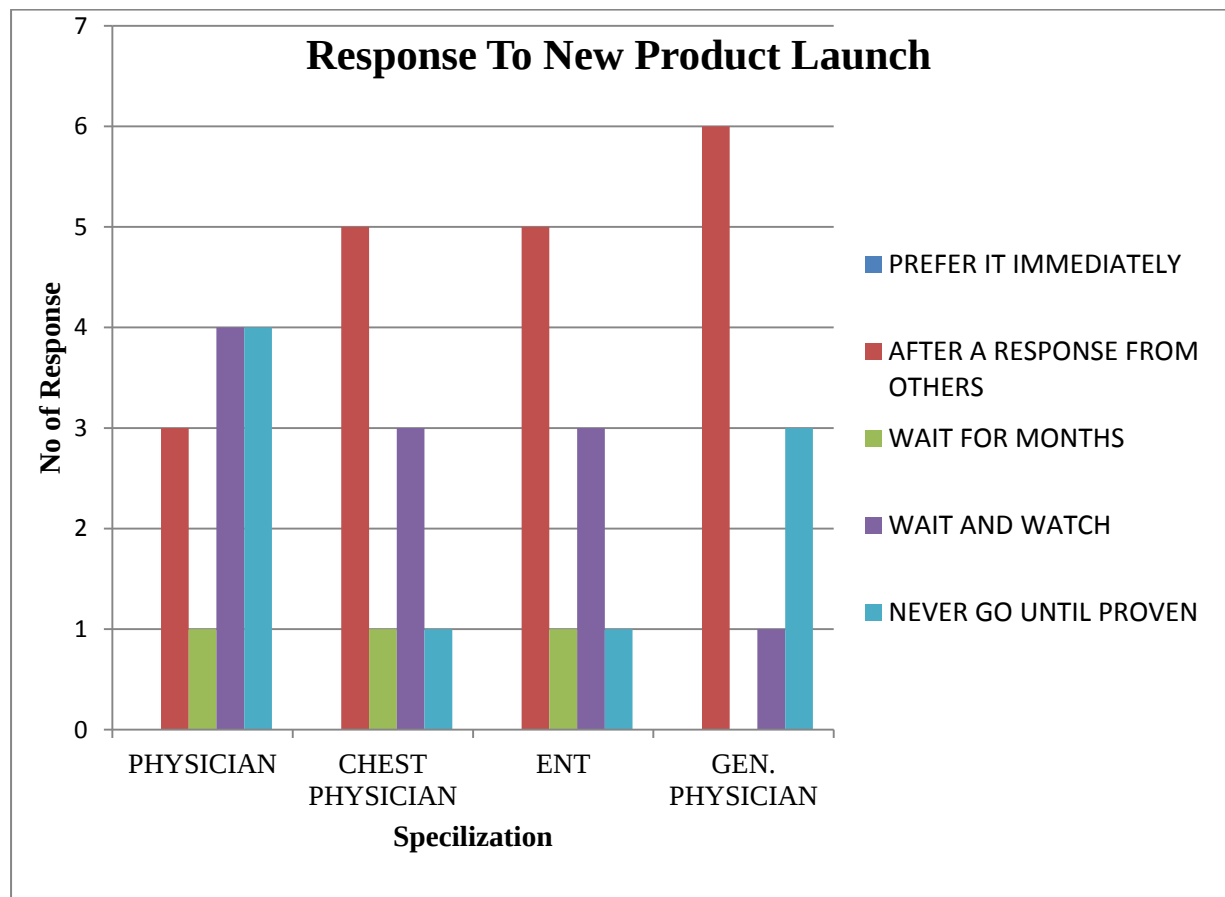


Figure no:-7

RESPONSE	PHYSICIAN	CHEST PHYSICISN	ENT	GEN PHYSICIAN
PREFER IT IMMEDIATELY	0	0	0	0
AFTER A RESPONSE FROM OTHERS	3	5	5	6
WAITNFOR MONTHS	1	1	1	0
WAIT AND WATCH	4	3	3	1
NEVER GO UNTIL PROVEN	4	1	1	3

Interpretation:-

- From the above table it can be concluded that doctors generally prescribed newly launched cough syrup after getting a good response of it by other doctors.

Q8. Do you prescribe traditional cough remedy in place of Allopathic Cough Syrups?

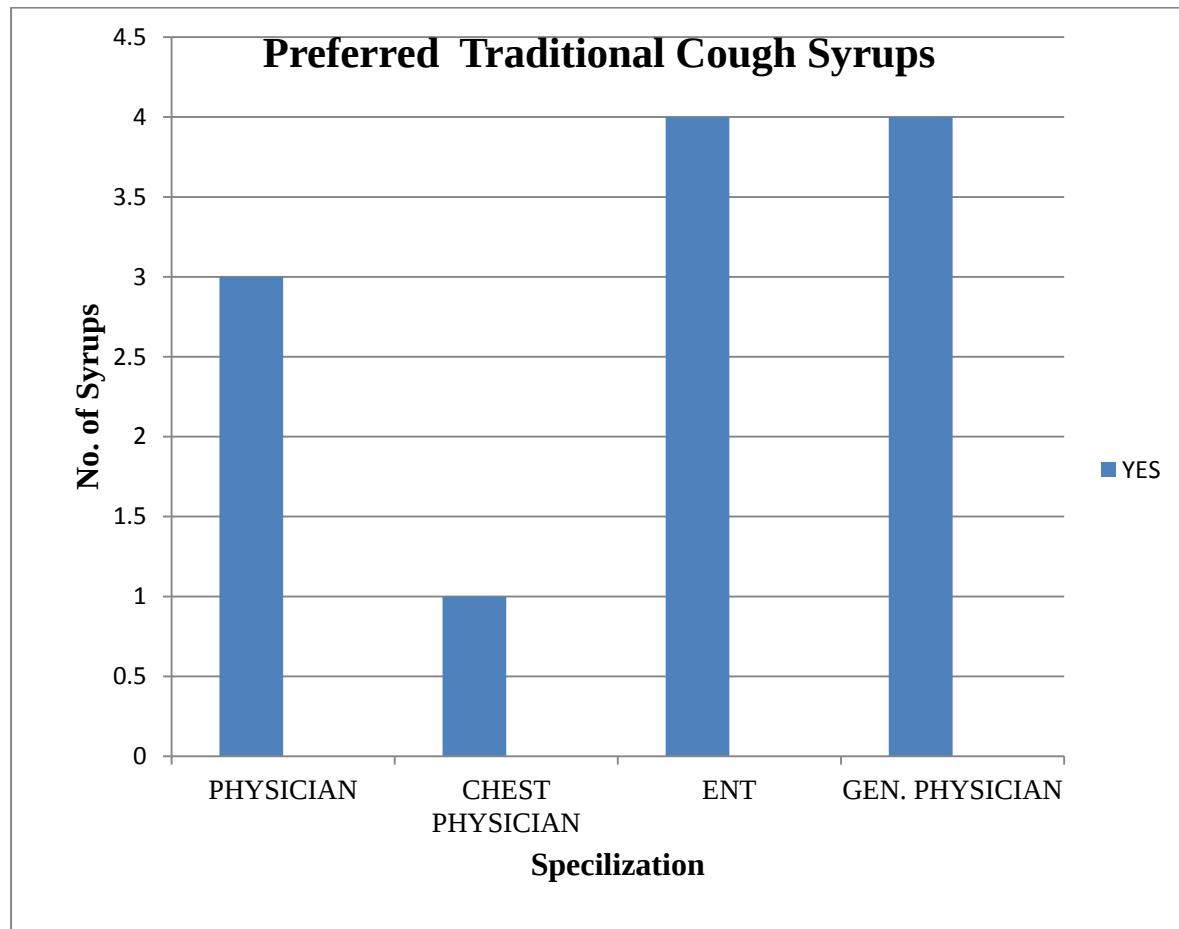


Figure no:-8

Specialization	YES	NO
PHYSICIAN	3	7
CHEST PHYSICIAN	1	9
ENT	4	6
GEN.PHYSICIAN	4	6

Interpretation:-

- From the above it can be seen that majority of doctors wanted to prescribe allopathic cough syrups to their patients instead of traditional ones. Moreover, amongst the all, chest physician preferred to prescribe allopathic cough syrups.

Conclusion

- Sale of the cough syrups was based on seasonality. High sale was found in winter season and after the end of winter season.
- Most of the doctors prescribed Dextromethorphan instead of Codeine in combination with other salt of drug for dry cough.
- Majority of the doctors were not brand specific.
- All of the doctors preferred syrup as dosage form for both wet and dry cough.
- All of the doctors preferred 100 ml as a pack size syrup for both wet and dry cough.
- Most of the doctors prescribed all combinations available for wet cough.
- Most of the doctors preferred to prescribe a product when it launched after a response from others.
- Few doctors preferred to prescribe traditional cough remedy for cough.

Learning

- I got an opportunity to apply the various theories that had been taught in modules hence gained practical experience.
- I got to know how the different departments in an organization in accordance with each other towards a common goal.
- The research paper review gave me a lot of knowledge about how studies are conducted for the molecule.
- The field work taught me how important is to build relationship with the doctors.
- I also designed a questionnaire for the study which gave me a lot of knowledge about how the questions are to be framed so as to get the data for the study and also how to extract information from the data collected.
- During the summer internship I got to actually experience how the multi-national companies function in different locations.
- In the internship period I got to know the importance of hard and soft skills and technical knowledge and also how important it is to create the right combination of the two to get success in any project.

Recommendation to Abbott health care

1. Sale of two potent brands of Abbott health care as Phensedyl and Tossex were very low in the urban areas so company should more focus on that areas.
2. According to survey there should be a new product line for wet cough in the market.
3. According to observation, it is recommended that there should be a line extension for dry cough combination with Dextromethorphan.

Bibliography

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 6. www.mims.com
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Annexures

Most Cough Syrups Brands available in the Indian Pharmaceutical Market -

Brand names	Compositions	Company Names	Dosage forms
Asthalin	Salbutamol	Cipla	Syrup, Tablet
Asthalin Expectorant	Salbutamol + Guiphenisin	Cipla	Syrup
Ascoril –C	Codeine Phosphate + Chlorpheniramine	Glenmark	Syrup
Tossex	Codeine Phosphate + Chlorpheniramine	Abbott	Syrup
Phensidyl	Codeine Phosphate + Chlorpheniramine	Abbott	Syrup
Axalin	Ambroxol + Guiphenisin + Salbutamol + Menthol	Cipla	Syrup
Solvin	Bromhexine + Pseudoephedrine	Ipca	Syrup, Tablet
Bronchosolvin	Guiphenisin + Tarbutalin + Bromhexine	Ipca	Syrup, Tablet
Grillinctus	Dextromethorphan + Chlorpheniramine + Guiphenisin + Ammo. chloride	Francho-Indian	Syrup
Grillinctus – BM	Terbutaline + Bromhexine	Francho-in	Syrup
Benadryl	Diphenadramine + Ammo. chloride + menthol + Sod. citrate	J&J	Syrup
Bro-Zedex	Bromhexine + Guiphenisin + Terbutaline + Menthol	Wockhardt	Syrup
Coscopin Linctus	Noscapine + Chlorpheniramine + Citric acid + Sod. Citrate + Ammo. chloride	BE	Syrup
Cosome	Dextromethorphan + Phenylpropylamine + Chlorpheniramine	Merck	Syrup
Zeet – linctus	Dextromethorphan + Guiphenisin + Phenylpropylamine	Alembic	Syrup
Tus-Q-Dx	Dextromethorphan + Chlorpheniramine + Phenylephrine HCL	Blue-Cross	Syrup
Corex	Chlorpheniramine + Codeine Phosphate + Menthol	Pfizer	Syrup
Glycodin	Glycodinterpin + Dextromethorphan + Menthol + Glycerine	Alembic	Syrup
Chericof	Dextromethorphan + Chlorpheniramine + Phenylephrine	Ranbaxy	Syrup
Cadiphylate	Ephedrine + Phenobarbitone + Piperazine + Theophylline	Cedilla	Syrup
Priton Exp.	Chlorpheniramine 4mg	GSK	Syrup
Actified – Dm	Triprolidine HCl + Dextromethorphan	GSK	Syrup
T-Minic	Dextromethorphan	Novartis	Syrup, Tablet
Cadicoff	Dextromethorphan + Chlorpheniramine + Guiphenisin + Ammo. chloride	Cadila	Syrup
Fluzet	Dextromethorphan + Chlorpheniramine + Phenylephrine + PCM	Raxcel	Syrup

List of visited doctors-

S.No.	Doctors Name	Hospital/Clinic where He or She works	Designation	Landmark
1	Dr.DilipBagvani	SMS	Md. Medicine	Jaipur
2	Dr.Laxmikant	SMS	Md. Medicine	Jaipur
3	Dr.Vipin Jain	S.K. Soni	Md. Medicine	Jaipur
4	Dr.BrijeshBhardwaj	S.K Soni	Md. Medicine	Jaipur
5	Dr.G.R.Singhavi	SDMH	Md. Medicine	Jaipur
6	DR.V.K.Malpani	SDMH	Md. Medicine	Jaipur
7	Dr.G.N.Saxena	Clinic	Md. Medicine	Jaipur
8	Dr.PraveenManglunia	Saket hospital	Md. Medicine	Jaipur
9	Dr.Praveen Gupta	Saket hospital	Md. Medicine	Jaipur
10	Dr.Rajeev Gupta	Fortis Jaipur	Md. Medicine	Jaipur
11	Dr.Ajay Nair	NH	Md. Medicine	Jaipur
12	Dr.AshwiniMathur	Clinic	Md. Medicine	Jaipur
13	Dr.DeepakChouhan	Nidan hospital	Md. Medicine	Jaipur
14	Dr.SudhirKhuteta	Shub hospital	Md. Medicine	Jaipur
15	Dr.Maoj Gupta	Manu hospital	Md. Medicine	Jaipur
16	Dr.B.S.Gupta	Gangwal park	Md. Medicine	Jaipur
17	Dr.SharadBansal	Bansal hospital	Md. Medicine	Jaipur
18	Dr.MukeshSinghal	Kaveri Clinic	Md. Medicine	Jaipur
19	Dr.RenuSahgal	Gangwal Park	Md. Medicine	Jaipur
20	Dr.SandeepGarg	Garg hospital	Md. Medicine	Jaipur
21	Dr.Nitingupta	Clinic	Chest physician	Jaipur
22	Dr.S.K.Mathur	Clinic	Chest physician	Jaipur
23	Dr. Suresh kulwal	Chest &T.B. Hospital	Chest physician	Jaipur
24	Dr.N.K.Jain	Chest & T.B. hospital	Chest physician	Jaipur
25	Dr.P.R.Gupta	Chest & T.B. hospital	Chest physician	Jaipur
26	Dr.Virendra Singh	SMS Jaipur	Chest physician	Jaipur
27	Dr.DeveshKanoongo	Clinic	Chest physician	Jaipur
28	Dr.Arunkr.Mehta	Fortis	Chest physician	Jaipur
29.	Dr.DeepakYaduvanshi	fortis	Chest physician	Jaipur
30.	Dr.ShubhRanshu	NH	Chest Physician	Jaipur
31.	Dr.AtulMakhija	Amodh hospital	ENT	Jaipur
32.	Dr.R.S. Bansal	Clinic	ENT	Jaipur
33.	Dr.Jyoti	Jain hospital	ENT	Jaipur
34.	Dr.Manprakash Sharma	SMS	ENT	Jaipur
35.	Dr.SanjayNarvani	Jaipur hospital	ENT	Jaipur
36.	Dr.VeeraTyani	Curewell hospital	ENT	Jaipur
37.	Dr.RanaHarjit Singh	Holy family hospital	ENT	Jaipur
38	Dr.PrakashChandvani	Monilek hospital	ENT	Jaipur
39	Dr.MohanKulhari	Fortis	ENT	Jaipur

40	Dr.AmitNahata	BHRC	ENT	Jaipur
41	Dr.Lokesh	Private clinic	GeneralPhysician	Jaipur
42	Dr.Vinod Joshi	Joshi hospital	GeneralPhysician	Jaipur
43	Dr.SuneelRanawat	Sanjivani	GeneralPhysician	Jaipur
44	Dr.D.L.Sharma	Sharma clinic	GeneralPhysician	Jaipur
45	Dr.L.C.Dhoka	Upchar clinic	GeneralPhysician	Jaipur
46	Dr.Ravikant	Saket hospital	GeneralPhysician	Jaipur
47	Dr.Sandeep Gupta	Gupta hospital	GeneralPhysician	Jaipur
48	Dr.prateekmangal	Mahatma Gandhi hospital	GeneralPhysician	Jaipur
49	Dr.Shyam	Saket hospital	GeneralPhysician	Jaipur
50	Dr.M.L.agrawal	Private clinic	GeneralPhysician	Jaipur

Disclaimer

I am....., a student of **Institute of Health Management Research (IIHMR)**, Jaipur. I am conducting this survey a part of my academic curriculum. The information provided by you in this survey will be kept confidential and will not be diverted to anyone. I request you to cooperate and help me in this project by filling up the questionnaire.

Questionnaire for Doctors:

Name-	Qualification-
City-	Contact no.-
Having own hospital- Yes/No-.....	Attached with Hospital-Yes/No-.....
Address-	

Q1.Average Patient /day-

Parameter	Total
Total patient	
New patient(% of total)	

Q2.Average no. of patient to whom you prescribe cough syrup quarterly-

Jan -March	April-June	July- September	October-December

Q3.which type of Combination do you mostly prescribe for the Dry Cough?

Content	Mark	If yes company name	If yes ,which brand
Codeine + Antihistaminic			
Dextromethorphan+Antihistaminic			

Q4. Which dosage form do you mostly use for Dry Cough?

a.Tablets ()

b.Syrups ()

Q5. Which syrup brand do you prefer mostly for Dry Cough out of say 10 patients?

Brand name	No.of patients
Phensidyl	
Corex	
Tossex	
Others	
Total -	10

Q6.which pack size do you mostly prescribe to the Patient?

- a. 50ml. () b. 100 ml.()

Q7. which type of combination do you mostly prescribe for the wet Cough ?

contents	Mark	If yes company name	Which brand name
Guiaphensin + Salbutamol			
Guiaphensin + Dextromethorphan			
Bromhexine + Pseudoephedrine			
Diphenhydramine+ Ammonium chloride			
Others			

Q8.which brand do you mostly prefer for Wet Cough out of say 10 patients ?

Brand name	No.of patients
Benadryl	
Solvin	
Grilinctus	
Others	
Total -	10

Q9.Whenever a new cough syrup is launched,What is your response while adopting it?

Please tick –

Prefer to adopt it immediately	Will prescribe after a week of response from others	Wait for month or two and will go for	It is better to wait and watch	Never go for new molecules is proven for a year

Q10. Do you prescribe traditional cough remedy in place of Allopathic Cough Syrups?

- a. Yes () b. No ()

Q11.Any other comments would you like to write for cough syrup?

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