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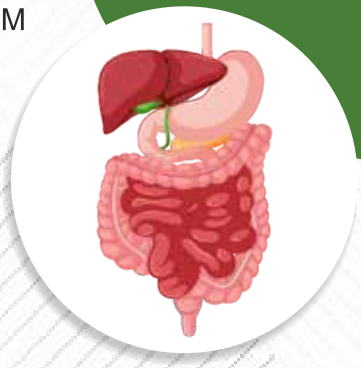

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CLINICAL STUDY

A Survey to Assess the Efficacy and Tolerability of Natural Appetite Stimulants in Pediatric Patients

DURGAPRASAD MARATHE*, PRADYUMNA RATNAKAR†

ABSTRACT

Anorexia, a common symptom in children, leads to undernutrition, with over 60 million underweight children in India suffering from frequent illnesses. Lack of adequate diet, proper breastfeeding and sufficient protein contribute to increased incidence of undernutrition. Parents often complain their children don't eat enough, making mealtimes difficult and impeding growth. Appetite stimulants like cyproheptadine are available, but side effects like sedation, fatigue, disorientation, impaired coordination, restlessness, excitation and irritability limit their use especially in the pediatric population. The use of herbal supplements has increased worldwide, with parents seeking guidance from pediatricians and primary care professionals regarding the efficacy and safety of these products. The study was a retrospective study conducted via a questionnaire-based survey among all doctors between April and June 2023 to assess the efficacy and tolerability of natural appetite stimulants in pediatric patients. Results showed that patients in the age group of 0 to 5 years (23.1%) were the most common visitors in the doctor's clinic and appetite stimulant agents were being prescribed most of the time (44.8%). They preferred prescribing natural appetite stimulant mostly (34.3%) for poor appetite (37.3%), followed by poor weight gain and growth (22.8%). The natural appetizer was found to nonaddictive and nonsedative with an improvement in the overall well-being (31.3%) among patients. The results suggest that the natural intervention has the potential to serve as a valuable adjunctive therapy in managing appetite challenges and promoting healthy weight gain in pediatric populations and to optimize pediatric nutrition and overall well-being.

Keywords: Anorexia, undernutrition, natural appetizers, efficacy, tolerability, children

Pediatric patients facing appetite challenges often pose a significant concern for health care professionals and caregivers. Limited food intake can lead to undernutrition, inadequate growth and diminished overall health. A loss of appetite can weaken the immunity and the body becomes susceptible to different infections, which might become life-threatening.[1]

Consequently, the need to explore safe and effective appetite stimulation methods becomes paramount. Several appetite stimulants are available, one of which is cyproheptadine. Drowsiness and somnolence were the most frequently reported side effects of using cyproheptadine. So far 1 case of acute liver failure has also been documented after use of cyproheptadine.[2,3]

Phytochemicals derived from plants have been reported to be well-tolerated by the human body and hence increasingly being used as effective therapeutic alternatives against various illnesses, including viral infections. According to a study, from 1940 to 2014, 49% of all small molecules approved by the US Food and Drug Administration (FDA) were natural products or their derivates.[4]

In recent years, the use of natural appetite stimulants has gained attention as a potential solution for pediatric patients. These natural substances, derived from herbs, plants or other organic sources, are believed to possess properties that can enhance appetite and support healthy weight gain.

Herbs that significantly increase appetite include Guduchi, Saunf, Kutki, Vidang, Amalaki, Kachur, Yavani, Pippali, Jeera and Nagarmotha. They have strong immunomodulatory, antidiabetic, antispasmodic,

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anti-inflammatory, antioxidant, antistress and hepatoprotective qualities. These properties work in concert to enhance digestion and lessen digestion-related issues including diarrhea, colitis, vomiting, hyperacidity, etc.[5-18]

However, despite their widespread use, the efficacy and tolerability of these natural appetite stimulants in pediatric patients remain largely anecdotal and poorly understood.

To bridge this knowledge gap, a questionnaire-based survey is presented here; it is designed to assess the effectiveness and tolerability of natural appetite stimulants in pediatric patients. By capturing the firsthand experiences and opinions of health care professionals, caregivers and the patients themselves, this survey aims to provide valuable insights into the practical use and outcomes of these natural interventions.

METHODS

Study Design and Setting

The study was a retrospective study conducted via a questionnaire-based survey among all doctors between April and June 2023. It is a mixed-method study to assess the efficacy and tolerability of natural appetite stimulants in pediatric patients.

Study Population

All qualified doctors (General Practitioners, Physicians and Pediatricians) practicing modern medicine were eligible for the survey and were approached to participate. The survey intended to include doctors across all clinical departments, work experience and professional hierarchy to ensure the representation of different specializations.

In this study, 3325 Indian doctors participated in the questionnaire survey on treatment options for loss of appetite and poor immunity among children, starting from infants.

Data Collection

The survey tool was a validated questionnaire containing 11 questions. It was in the form of a closed-ended questionnaire, was developed by an expert panel comprising a physician, and a pharmacologist. The questionnaire was specifically focused on the study aims and tailored contextually to fit local situations.

All filled forms were entered into the software database. For discrepancies related to data entry alternate forms were physically cross-checked. Complete cases were analyzed and missing data were not included because of low occurrence. The data were analyzed after cleaning the data and final report was prepared.

RESULTS

In the study, patients in the age group of 0 to 5 years (23.1%) were the most common visitors in the doctor's clinic followed by those who were 6 to 10 years old (19.5%) and 8.8% children who were more than 10 years visited by doctors minimum as depicted in Figure 1.

It was further observed that doctors prescribed appetite stimulant agents to their patients most of the time as is shown in Figure 2 and 47.1% are aware that there are natural appetite stimulants available in the market (Fig. 3).

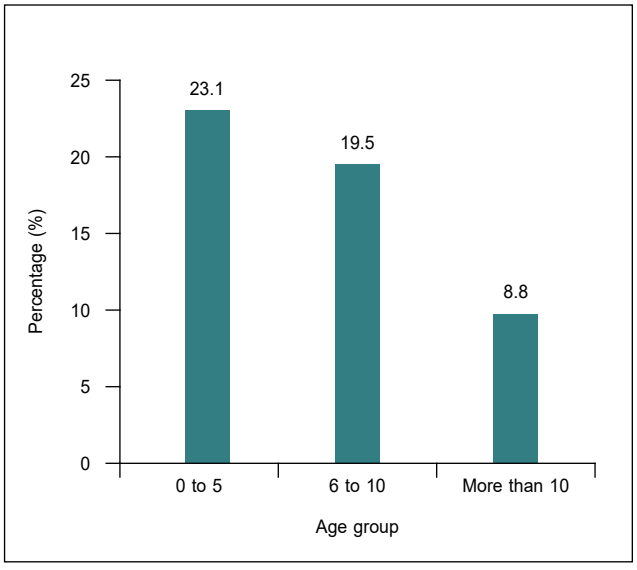

Figure 1. Graph showing patient age group visiting doctors.

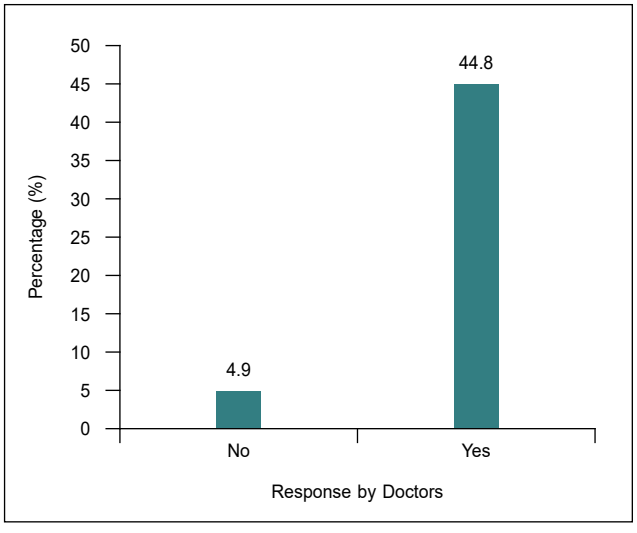

Figure 2. Graph showing doctors response in prescribing appetite stimulant agents.

Figure 4 shows the graph depicting the preference of doctors for the natural appetite stimulant mostly (34.3%) containing a natural combination of ingredients like Saunf + Guduchi + Amalaki + Kutki + Vidang.

Figure 5 shows graph depicting major side effects of appetite stimulants such as cyproheptadine which included drowsiness (30.3%), dizziness (18.6%), dry mouth, nose and throat (9.8%), followed by nausea (7%), muscle weakness (6%) and excitement (2.2%).

The study survey found that mostly doctors prescribed natural appetizer for poor appetite (37.3%), followed by poor weight gain and growth (22.8%), and followed by poor immunity (9%) and constipation (5.5%) as is evident from the Figure 6.

Intake of natural appetizer showed 31.3% improvement in overall well-being which included improvement in food intake, energy levels and satiety with additional features of being nonaddictive and nonsedative as shown in Figure 7.

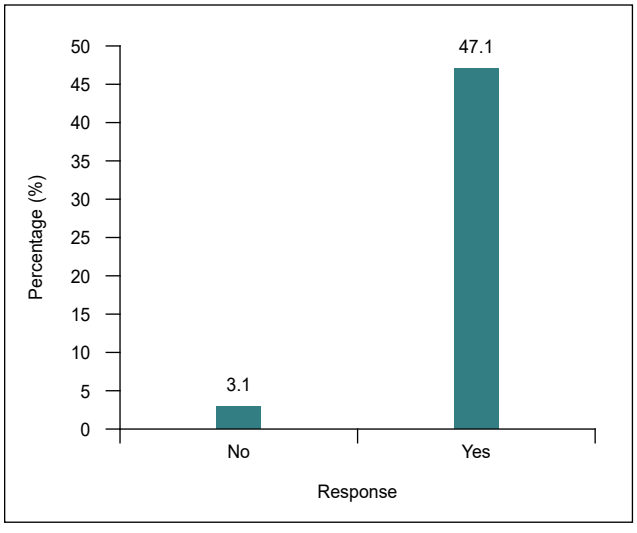

Figure 3. Graph showing awareness of doctors about availability of natural appetizers in the market.

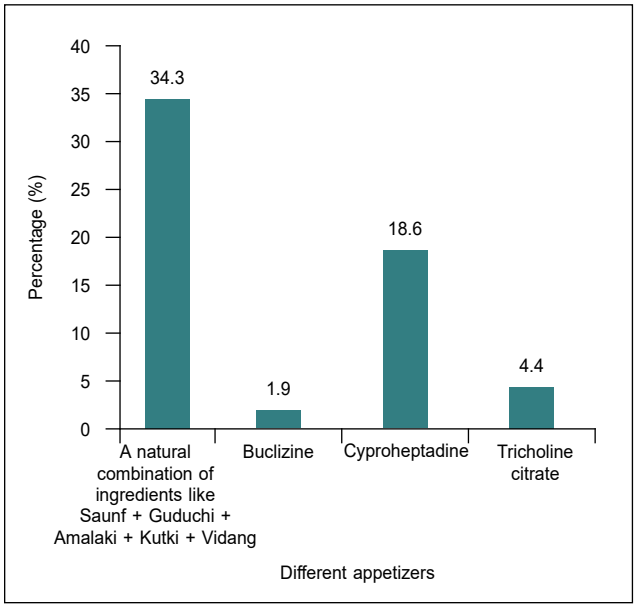

Figure 4. Graph showing preference of doctors for the natural appetizers.

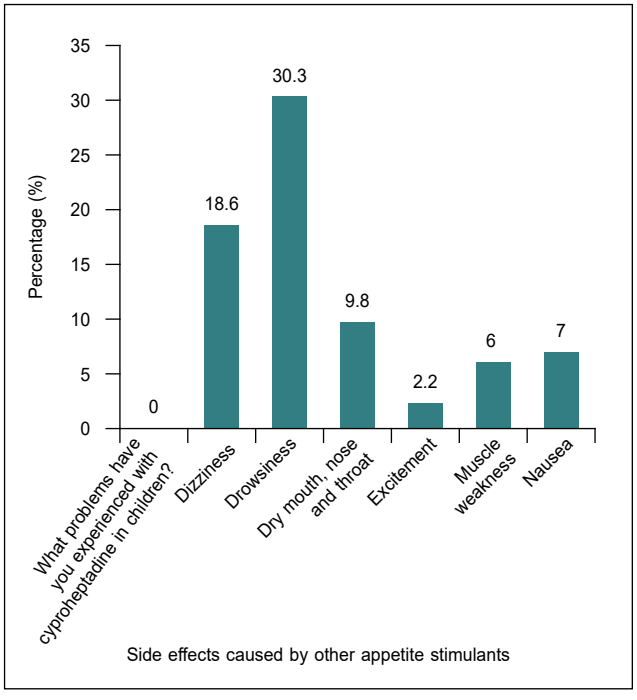

Figure 5. Graph showing major side effects of appetite stimulants such as cyproheptadine.

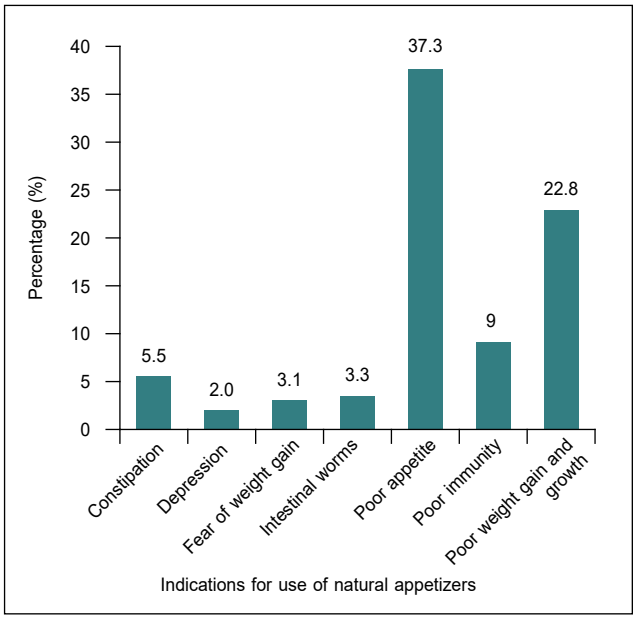

Figure 6. Graph showing indications for use of natural appetizers.

The majority of natural appetizers exhibited superior natural appetite stimulant, digestive and carminative characteristics with strong orexigenic nature and ideal growth among children. It was also discovered to be safer than cyproheptadine because they don't have the typical adverse effects of cyproheptadine. The advantages or beneficial properties of the natural appetizer are evident from the Figure 8.

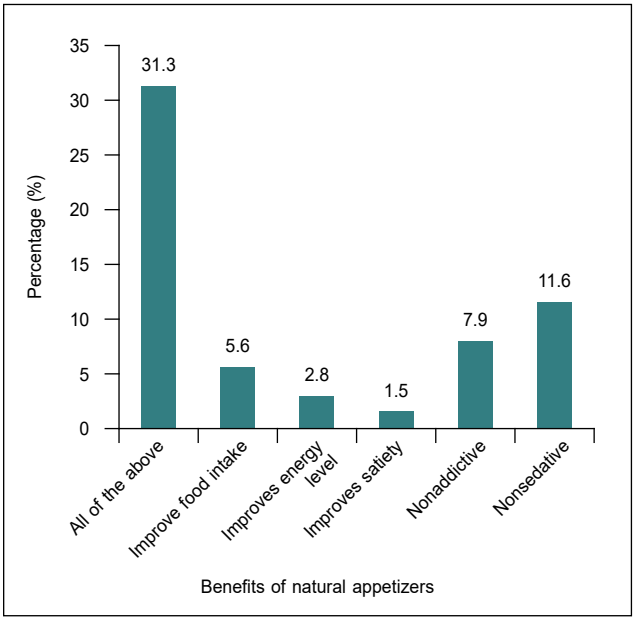

Figure 7. Graph showing benefits of using natural appetizers.

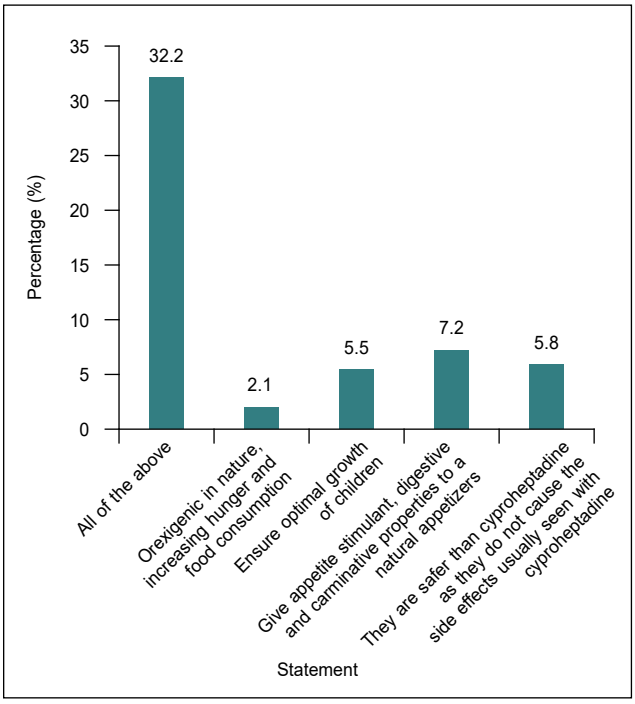

Figure 8. Graph showing beneficial properties of using natural appetizer.

In the study Figure 9 showed that natural appetizers discussed herein did not show common side such as chest congestion, drowsiness, headache, low energy levels and nausea which is mostly observed in others, which emphasizes the better safety and tolerability profile of the natural appetizer.

Further, the results as depicted in Figure 10, showed that the discussed natural appetizers showed better compliance (36.4%). Hence, the natural appetizer is having better safety and tolerability profile. Patients who reported compliance problems said that reason was mostly related to resistance to taking medicines, not tasty and forgetting to time, etc.

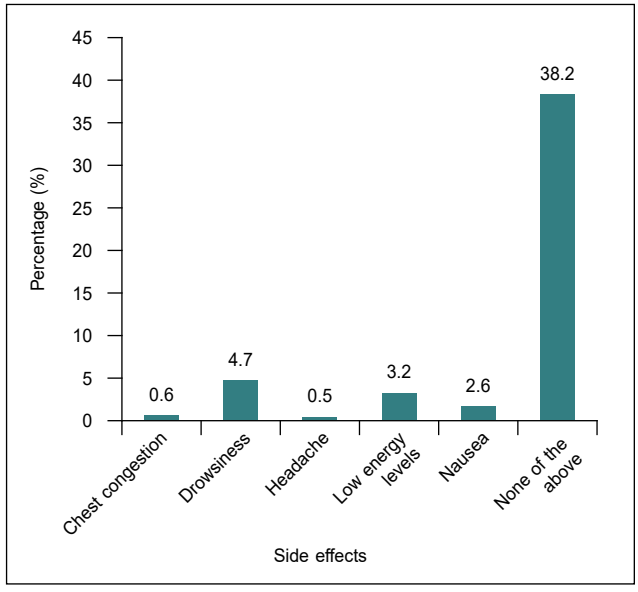

Figure 9. Graph showing better safety tolerability profile of the natural appetizer.

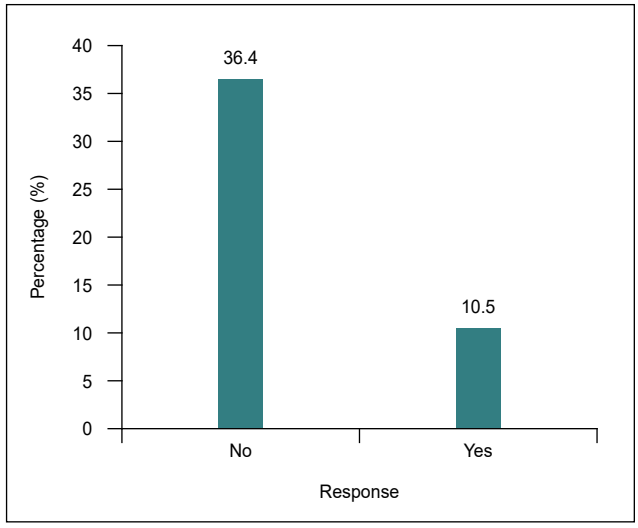

Figure 10. Graph showing response to experiences of any compliance problems with natural appetizer.

DISCUSSION

The present perception-based survey aimed to assess the efficacy and tolerability of a natural appetite stimulant containing Guduchi, Saunf, Kutki, Vidang, Amalaki, Kachur, Yavani, Pippali, Jeera and Nagarmotha in pediatric patients. Through the collection of subjective experiences and opinions from health care professionals, caregivers and the patients themselves, we sought to gain insights into the practical use and outcomes of this particular natural intervention.

Guduchi (*Tinospora cordifolia*) has a wide variety of compounds that may have physiological effects. It is reported to offer exceptional immunomodulatory, anti-diabetic, antispasmodic, anti-inflammatory, antioxidant, antistress and hepatoprotective effects, which combined enhance digestion and lessen digestion-related issues including diarrhea, colitis, vomiting, hyperacidity, etc.[5]

Fennel, or *Foeniculum vulgare* (Apiaceae), is a well-known and significant medicinal and fragrant plant used to treat digestive, gastrointestinal and carminative problems. It is believed that *F. vulgare's* phenolic components are what give its antioxidant and hepatoprotective properties.[6]

A number of studies revealed that *F. vulgare* is useful in treating a variety of diseases, such as abdominal pains, colic in children, conjunctivitis, constipation, detoxifying, diarrhea, flatulence, gastralgia, gastritis, irritable colon, kidney problems, laxative, leukorrhea, liver pain, mouth ulcer and stomachache.[7]

Embelia ribes, often known as Robustal Berries or Vidanga, is a natural germicide. Its medicinal uses, health advantages and effectiveness in treating elephantiasis, children who grind their teeth while they sleep, stomach worms, heart conditions, facial paralysis caused by heat exhaustion, blood motions, sticky motions, back pain during periods, eye brow pains, forehead pains and blood motions. Children's appetites are improved when they consume 3 g of *E. ribes* powder twice daily together with honey. This remedy treats all issues brought on by stomach worms.[8,9]

Kutki (*Picrorhiza kurroa*) has been recommended for a variety of clinical conditions, including anorexia, burning sensation, fever, intermittent fevers, prediabetic and diabetic states, asthma, cough, helminthiasis, adipolysis, orexigenic, laxative, anti-inflammatory, hepatoprotective and diuretic activities. It is also beneficial for heart function and hepatobiliary and gastrointestinal disorders. As a result, it becomes a good option for natural appetite stimulant number.[10]

The *Emblica officinalis* fruit is astringent in character and primarily composed of tannins, which have a significant potential for treating digestive illnesses like diarrhea and dysentery. It works well to reduce hyperacidity.[11]

Cyperus rotundus L., also known as Nagarmotha, is frequently used to treat a wide range of conditions and illnesses, including indigestion, constipation, dysentery, abdominal distention, neurogenic gastralgia, chest pains, painful and irregular catamenia, skin conditions, furuncle infections, staphylococcal infections, leprosy, sprains and bruises, fever and stomach pain from animal tissue. It possesses a wide range of pharmacological qualities, including antibacterial and microbial activity, gastrointestinal activity, anti-inflammatory, antilaceration, wound healing activity, insecticidal properties, antioxidant, antiobesity, antidiarrheal activity, antiseptic activity and antipyretic activity. It is also nutritionally beneficial. Hence including this in a natural appetite stimulant enhances the property.[12]

Extracts from the roots and fruits of *Piper longum* contains several bioactive phytochemicals and essential oils were found to have a number of pharmacological benefits, including antimicrobial, antiparasitic, anthelminthic, antioxidant, anticancer, hepatoprotective, anti-angiogenic, immunomodulatory and so forth. Ayurvedic medication considers *P. longum* as a potent rejuvenator and is effective and helpful in treating bloating and flatulence.[13,14]

Cumin (*Cuminum cyminum)* extracts have been demonstrated in studies to have greater protease, lipase and amylase activities, suggesting a potential function in boosting the digestive enzymatic activities. These extracts improve phytase activity, which increases the bioavailability of minerals and improves digestion and appetite.[15]

Trachyspermum ammi, also known as "Ajwain" increases gastric acid secretion. Tests on anesthetized rat revealed that *T. ammi* causes a nearly fourfold increase in gastric acid production. *T. ammi* was added to the diet of experimental rats *in vivo*, where it decreased food transit time, increased the activity of digestive enzymes, and/or increased bile acid secretion.[16,17]

Curcuma zedoaria has been found to have anti-inflammatory, antioxidant, anticarcinogenic, antimutagenic, anticoagulant, antifertility, antidiabetic, antibacterial, antifungal, antiprotozoal, antiviral, antifibrotic, antivenom, antiulcer, hypotensive and hypocholesteremic properties. It demonstrated exceptional natural antibacterial, disinfecting, anti-inflammatory and analgesic effects.

It also aided digestion to enhance gut flora. Bloating, indigestion and intestinal worm infestation has been treated with it since long time.[18]

Thus the ingredients present in the natural appetite stimulant discussed here seem to have several beneficial effects on the body, enhance immunity and overall health. The survey results indicated a generally positive perception regarding the efficacy of the natural appetite stimulant in pediatric patients.

A significant number of health care professionals and caregivers reported observing improvements in appetite and food intake among the patients who received this intervention. Figure 2 showed doctors prescribed appetite stimulant agents to their patients most of the time (44.8%) and 47.1% were aware of that natural appetite stimulants are available in the market (Fig. 3). Figure 4 (34.3%) showed that the use of natural appetizer was more prevalent. Figure 6 demonstrated that mostly doctors prescribed natural appetizer for poor appetite (37.3%), followed by poor weight gain and growth (22.8%) and followed by poor immunity (9%) and constipation (5.5%).

Figure 5 shows that mostly pediatric patients complained of drowsiness and dizziness after taking cyproheptadine as an appetite stimulant. Several appetite stimulants are available, one of which is cyproheptadine, but commonly reported side effects such as drowsiness and somnolence limits it use.[2]

In a case study reported by Chertoff et al, a 55-year-old white female without a history of liver or gastrointestinal disease was admitted with acute liver failure after trying cyproheptadine for increasing appetite. Treatment involved supportive care, symptomatic medication and discontinuation of cyproheptadine. The authors also stated that in more than 20 years, this is the only case of cyproheptadine-induced acute liver failure that has been documented.[3] Figure 7 show the beneficial effects of the natural appetizer compared to other appetizer. Benefits included improvement in food intake, improvement energy levels and satiety with additional features of being nonaddictive and nonsedative.

The majority of respondents expressed that the natural ingredients within the appetite stimulant appeared to have a positive impact on increasing the desire to eat and promoting healthy weight gain in pediatric patients. They stated that natural appetizer containing Guduchi, Saunf, Kutki, Amalaki, Nagarmotha, Jeera, Pippali, Yavani, Kachur and Vidang exhibited better natural appetite stimulant, digestive and carminative properties with profound orexigenic nature and optimal growth of children. It was additionally found to be safer than cyproheptadine as they do not cause the side effects usually seen with cyproheptadine. The benefits of the natural appetizer are evident from the Figure 8.

Furthermore, the survey responses revealed that a considerable proportion of pediatric patients themselves reported experiencing an enhanced appetite and an increased interest in food after using the natural appetite stimulant.

In terms of tolerability, the survey findings highlighted that the natural appetite stimulant was generally well-tolerated by pediatric patients. Both health care professionals and caregivers reported minimal adverse effects associated with the use of this intervention. Figure 9 showed that common side effects mostly observed by other appetite stimulants were not observed in the natural appetizer. Further, the results showed that natural appetizer had a better compliance among the patients (36.4%, Fig. 10) and hence these were safe alternatives.

IMPLICATIONS AND LIMITATIONS

The results of this perception-based survey hold important implications for pediatric health care practice and nutrition management.

However, it is important to acknowledge certain limitations of this survey. Firstly, the study relied on subjective perceptions and self-reported experiences, which may introduce biases and variations in responses. Additionally, the survey did not include a control group or comparative analysis, making it difficult to establish a direct causal relationship between the natural appetite stimulant and observed improvements in appetite.

Hence, more research endeavors should focus on conducting controlled clinical trials to validate the findings of this perception-based survey. Such trials could include different parameters like dietary intake, and nutritional status to provide more robust evidence of the efficacy and tolerability of the natural appetite stimulant in pediatric patients.

CONCLUSION

To conclude the perception-based study on the effectiveness and acceptability conducted on pediatric patients showed an overall favorable opinion regarding its efficacy and tolerability of a natural appetite stimulant including Guduchi, Saunf, Kutki, Vidang and Amalaki, Pippali, Jeera, Yavani, Kachur and Nagarmotha. The results suggest that this natural intervention has the

potential to serve as a valuable adjunctive therapy in managing appetite challenges and promoting healthy weight gain in pediatric populations.

These findings can help health care professionals and caregivers to make more informed decisions regarding the use of natural appetite stimulants to optimize pediatric nutrition and overall well-being.

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