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Functional Abdominal Pain (FAP) in Children: Knowledge, Attitude, and Practice of Pediatricians in India

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ABSTARCT

Background and Objectives: Functional Abdominal Pain (FAP) is prevalent among children; diagnosis and management are challenging due to poorly understood etiology and lack of guidelines. We investigated pediatricians' current knowledge, attitude, and practice with respect to FAP.

Methods: A survey was conducted between December 2022 and March 2023 via a validated questionnaire, comprising 29 pertinent questions on general characteristics of pediatricians, and diagnosis and treatment of FAP, shared with ~2000 Indian pediatricians.

Results: Responses were received from 302 pediatricians, predominantly male (68.9%), aged 40-50 years (31.1%), from Tier-I (40.9%) places, practicing in private clinics (54.8%). Most respondents identified FAP definition (74.6%) and site of pain (78.1%). Confirmatory diagnosis was mostly done on the second or third visit (90.7%); vomiting was considered the predominant red flag (86.8%). FAP was believed to be a 'diagnosis of exclusion' (76%). Most respondents used ROME IV criteria (53%), ordered ultrasonography (USG) (74.3%), advised antispasmodics (75.6%), and agreed that investigations in upto 30% FAP cases were ordered due to parental pressure (79%). Most respondents expected ≤30% FAP patients to improve with non-pharmacological or pharmacological approaches, or with diet modification, and preferred combinatorial management strategy (60.1%). Probiotics were advised by 67.3% respondents in ≤20% patients, mostly using single strains (67.3%).

Referral rate to cross-specialties was low (<10%). Most respondents considered reduction in intensity and pain frequency as therapeutic success (61.8%).

Conclusions: A general awareness about FAP exists among Indian pediatricians; however, a consensus in diagnosis and management is lacking. Most respondents stated that guidelines might be helpful.

Keywords: Functional Abdominal Pain (FAP), Knowledge, Attitude, Practice, Pediatricians, India

INTRODUCTION

Functional Gastrointestinal Disorders (FGIDs) are prevalent among children due to changes in ecosystem and lifestyle. FGIDs are considered as morphological and physiological abnormalities originating from dysmotility and/or visceral hypersensitivity due to changed mucosal and immune function, microbiota, central nervous system processing, or genetic causes [1]. Functional Abdominal Pain (FAP) is a common childhood FGID with clinical features including abdominal pain accompanied by vomiting, dyspepsia, headache, bloating, constipation, or diarrhea. There are increasing evidences to suggest that the underlying etiology of FAP involves complex interactions within the 'microbiota–gut–brain axis' [2]. The worldwide prevalence of FAP is estimated to be 13.5% (range: 1.6% - 41.2%) with Asia reporting a pooled prevalence of 16.5% [3].

FGIDs are usually diagnosed based on symptoms since there are no specific tests or biomarkers for the same. It was in this backdrop that the symptom-based ROME criteria were developed by a group of experts in 1990s and has ever since been revised to integrate the improved understanding about the diseases. The most recent of the ROME criteria, ROME IV, came into effect in 2016 and included revisions to the definition and diagnostic criteria of FGIDs. As per ROME IV, a patient with any of the FGIDs is defined as one for whom 'after appropriate medical evaluation, the symptoms cannot be attributed to another medical condition'. Based on this, clinicians now have a choice of making a diagnosis without any tests or through selective clinical criteria. The categories of 'functional abdominal pain' and 'functional abdominal pain syndrome' in ROME III have been replaced by the term 'Functional abdominal pain-not otherwise specified' (FAP-NOS) in ROME IV. Thus, patients who do not meet the criteria for irritable bowel syndrome (IBS), functional dyspepsia (FD), or abdominal migraine criteria, are now categorized as FAP-NOS [4].

In the absence of any obvious organic pathology, the ROME criteria describes FAP as 'a dysfunction in the mechanisms involved in pain perception' [5]. Management of FAP is challenging as patients come from different psychosocial backgrounds and vary in their responses to different treatment regimen [2]. Despite the high prevalence of FAP, there is no documented literature, to the best of our knowledge, on the approach of pediatricians to the diagnosis and treatment of this indication in India, although studies have been published elsewhere [6].

We felt that it was required to understand the knowledge, attitude, and practice of Indian pediatricians towards FAP following the latest revision of the ROME criteria, and therefore, this survey was designed based on a self-administered questionnaire for collecting pediatricians' responses to various aspects of FAP diagnosis and management.

MATERIALS AND METHODS

After obtaining approval from an Independent Ethics Committee (IEC), this survey was conducted between December 2022 and March 2023 on practicing Indian pediatricians (including few pediatric gastroenterologists) with MD/DCH/DNB degree and who provide care to patients with FAP in healthcare setups/clinics/hospitals/colleges located across various regions of India (no minimum experience was mandatory). The survey was performed in compliance with the Indian Council for Medical Research (ICMR) and Indian Good Clinical Practice (GCP) guidelines for clinical research. A set of 29 pertinent questions (Supplementary Table 1) was designed based on survey of literature and suggestions from an expert committee of pediatricians. This validated questionnaire was shared with ~2000 pediatricians using electronic survey administered through Google Form. Responses were analyzed to assess knowledge, attitude, and practice of pediatricians regarding FAP in children. The survey was performed using anonymized information; confidentiality of pediatricians was maintained.

RESULTS

General characteristics of respondents: Responses to the self-administered questionnaire were received from a total of 302 pediatricians (henceforth referred to as 'respondents'). Of these, a few chose not to respond to all questions. The actual number of respondents to each question was, therefore, used as the denominator to evaluate the percentage of responses in each case. Respondents were predominantly male (68.9%), aged 40 to 50 years (31.1%), from Tier-I places such as state capitals and metro cities (40.9%), and practicing mostly in private clinics (54.8%) (Table 1). According to 90.7% respondents, the percentage of FAP patients that they encounter is ≤40%; the most-affected age-group being 6 to 10 years, as stated by over half of the respondents (57.6%) (Figure 1).

Table 1: Demographic characteristics of respondents.

Characteristic/Question	Response	Proportion of respondents, n (%)
Age (years)	Less than 40	78 (25.8%)
	40 to 50	94 (31.1%)
	50 to 60	69 (22.8%)
	Above 60	61 (20.2%)
Sex	Female	94 (31.1%)
	Male	208 (68.9%)
Practice setting	Corporate hospital	82 (27.2%)
	Government hospital	54 (17.9%)
	Private Clinic	165 (54.8%)
Place of practice	Tier-I (State capitals and Metro)	123 (40.9%)
	Tier-II (Other cities)	96 (31.9%)
	Tier-III (Towns)	82 (27.2%)

Supplementary Table 1: Questions included in the survey

Question	Options
Age of the doctor?	Less than 40 years
	40 to 50 years
	50 to 60 years
	Above 60 years
Gender	Male
	Female
Practice setting	Private clinic
	Government hospital
	Corporate Hospital
Place of practice	Tier-I (State capitals and Metro)
	Tier-II (Other cities)
	Tier-III (Towns)
What percent of your patients have FAP?	<20%
	20-40%
	40-60%
	60-80%
	>80%
In what age group (years) of children do you most frequently diagnose FAP?	<2
	2-5
	6-10
	10-15
How do you define FAP?	Episodic or continuous abdominal pain at least 3 times/month for at least 3 months
	Episodic or continuous abdominal pain at least 4 times/month for at least 2 months before diagnosis and abdominal pain cannot be explained by another medical condition after evaluation.
	Pain that persists for more than 3 months either continuously or intermittently.
	Pain that persists for more than 4 months either continuously or intermittently.
What is the site/location of abdominal pain in FAP?	Diffused abdominal pain
	Periumbilical
	Right iliac region
	Right lumbar region
Which Rome criteria do you use to diagnose FAP?	Rome III
	Rome IV
	Others- Clinical experience etc.

Question	Options
	None of the above
What are the red flag signs for FAP? (Tick all options that apply)	Vomiting
	Limited to area of abdomen (one quadrant)
	Dyspepsia
	Bloating
	Constipation
	Diarrhea
	Headache
Which visit are you comfortable in making a diagnosis of FAP?	1st visit
	2nd visit
	3rd visit
	I don't treat FAP
In what proportion (percent) of FAP do you diagnose IBS?	<25%
	25-50%
	50-75%
	75-100%
In what proportion (percent) of chronic abdominal pain do you diagnose IBS associated with constipation?	<10%
	10-30%
	30-50%
	>50%
Is FAP in children a diagnosis of exclusion?	Strongly disagree
	Disagree
	Neutral
	Agree
	Strongly agree
What investigations you do for confirming FAP?	CBC
	USG
	Stool test
	Urine routine
	Endoscopy
	X-ray abdomen
	Others
	None
In what percent of FAP do you order investigations for parental pressure?	<10%
	10-30%
	30-50%
	>50%

Question	Options
Which treatment option is preferred as first line therapy in children with FAP?	Behavior modification
	Either/or combination of Analgesics/Antispasmodics and laxatives
	Probiotics
	Combination of above
What is your preferred mode of management in FAP?	Pharmacological therapy
	Non-pharmacological interventions
	Both
	None
What is the diet modification you advise in your practice?	High fibre diet
	Milk elimination
	Low FODMAP
	Fluids therapy
	Others
What percent of children would get better with non-pharmacological treatment?	<10%
	10-30%
	30-60%
	>60%
What percent of children would get better with diet modifications?	<10%
	10-30%
	30-60%
	>60%
How frequently do you advise probiotics for FAP in children?	<10%
	10-20%
	20-50%
	>50%
Which probiotics do you use in functional abdominal pain?	*S. boulardii*
	LGG
	L. reuteri
	B. clausii
	Combination of probiotics
Do you think Indian guideline for FAP will be helpful?	Yes
	No
In what percentage of patients do you use pharmacological therapy?	<10%
	10-30%
	30-50%
	50-100%
	Antibiotics

Question	Options
What percent of FAP children would benefit from below management options?	Anti-amoebic (de worming)
	Proton pump inhibitors
	Antacids
	Carminatives
	Digestive enzyme preparation (lactase)
	Melatonin
What do you advise for pain management in FAP?	Antispasmodics
	NSAIDs
	Paracetamol
	Anti-psychotics/TCA/SSRIs
	Traditional home-based therapies
	Hot fomentation (local application)
What should be the primary therapeutic success of any FAP treatment?	Reduced intensity and frequency of abdominal pain.
	Children going back to school.
	Children becoming less agitated and fussy.
	Children having improved sleep
What percentage of your patients do you refer to the following?	Pediatric gastroenterologist
	Surgeon
	Gynecologist
	Psychiatrist

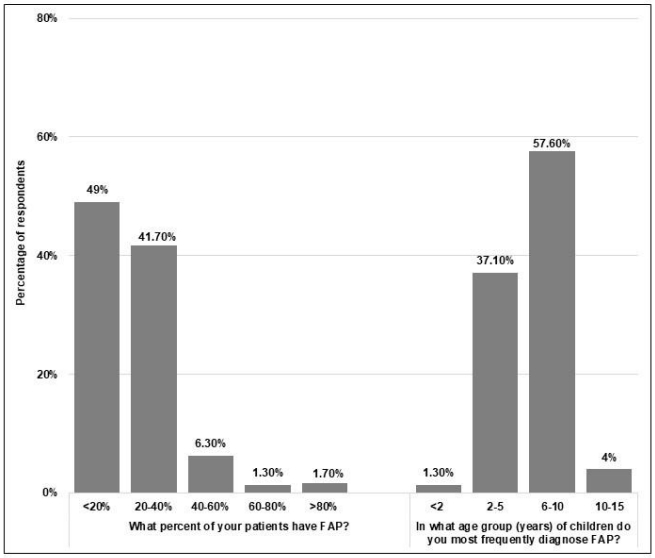

Figure 1: Responses to questions on patient characteristics. Overall information provided by respondents about the patient population that they treat for FAP.

Knowledge about FAP: Most respondents were aware of the definition of FAP as per ROME IV criteria (74.6%) and identified the periumbilical region (78.1%) as the site of abdominal pain in FAP. Vomiting was considered as a red flag for FAP diagnosis followed by pain in limited area of abdomen by a majority of respondents (86.8% and 74.8%, respectively). Most respondents were comfortable with making a diagnosis of FAP on the second (43%) or third (47.7%) visit; very few respondents (6.30%) were confident of making a FAP diagnosis on the first visit by a patient. Most respondents believed that there is minimal overlap between the indications of FAP and Irritable Bowel Syndrome (IBS): 75.6% respondents said that they diagnose IBS in <25% FAP patients and 56.1% respondents said that they diagnose IBS associated with constipation in <10% cases of chronic abdominal pain (Figure 2).

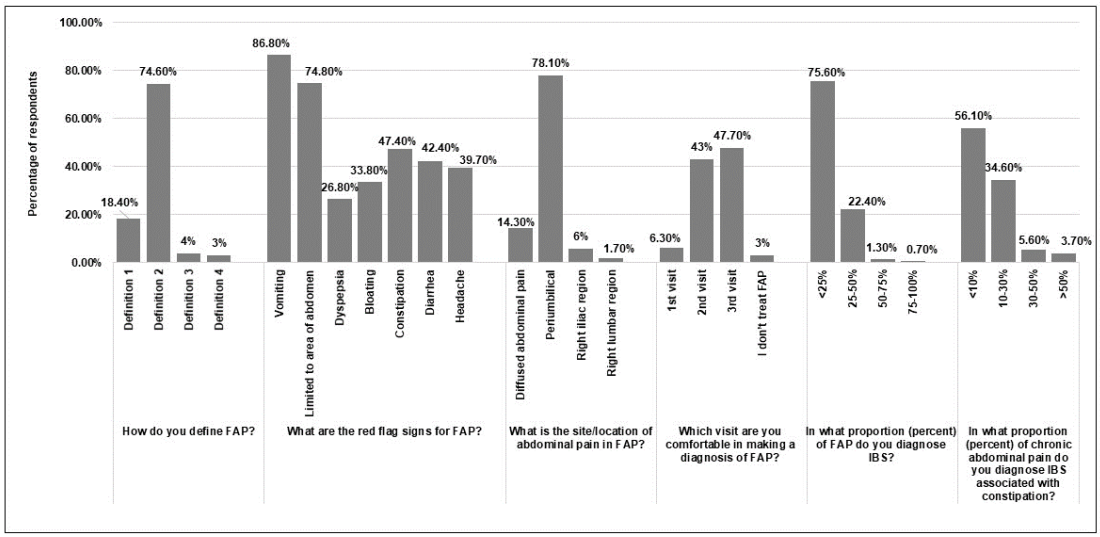

Figure 2: Responses to questions assessing 'knowledge' of pediatricians about FAP.

Possible definitions of FAP and diagnostic methods adopted by respondents. NOTE: Definition 1: Episodic or continuous abdominal pain at least 3 times/month for at least 3 months Definition 2: Episodic or continuous abdominal pain at least 4 times/month for at least 2 months before diagnosis and abdominal pain cannot be explained by another medical condition after evaluation Definition 3: Pain that persists for more than 3 months either continuously or intermittently Definition 4: Pain that persists for more than 4 months either continuously or intermittently.

Attitude towards FAP: Most respondents (76%) agreed or strongly agreed that FAP is a 'diagnosis of exclusion', that is, FAP can be confirmed only after closely related disorders are ruled out. The first line of therapy for FAP, according to most respondents (60.1%), was a combinatorial approach comprising of behavior modification, analgesics/antispasmodics and laxatives (singly or in combination), and probiotics. These treatment modalities, individually, were considered as first line therapy by a very few respondents (25.9%, 11%, and 3%, respectively).

Along similar lines, most respondents (67.8%) preferred a combination of pharmacological and non-pharmacological approaches for FAP management (Figure 3).

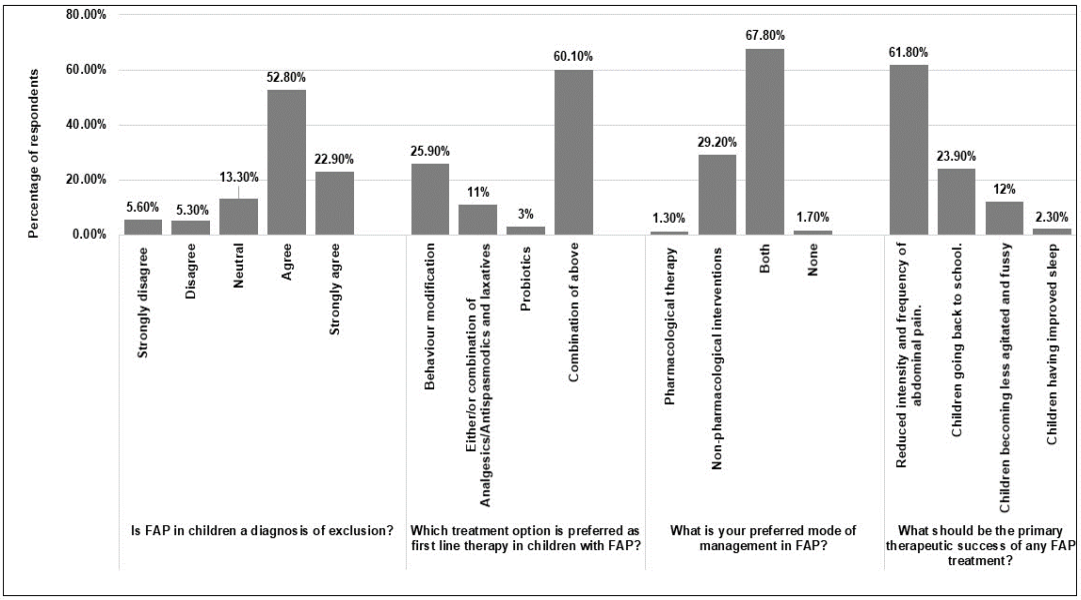

Figure 3: Responses to questions assessing 'attitude' of pediatricians towards FAP. Overall criteria for FAP diagnosis and preferred management strategies used by respondents.

Around 10% to 30% of children with FAP were expected to get better with non-pharmacological approaches by 41.7% respondents and with diet modifications by 54.5% respondents. More than half of the respondents believed that <30% FAP patients would get better with any of the following pharmacological approaches: antibiotics, de-worming medications, proton pump inhibitors (PPIs), antacids, carminatives, lactase, or melatonin (Figure 4). Irrespective of the approach preferred, most respondents (61.8%) opined that the yardstick of a therapeutically successful FAP treatment should be 'reduced intensity and frequency of abdominal pain'. Improved sleep, reduced agitation, and lesser absenteeism from school might be indicators of children getting better but were not considered as the ultimate goal of treatment (Figure 3). Around 98% respondents perceived a necessity of Indian guidelines for FAP.

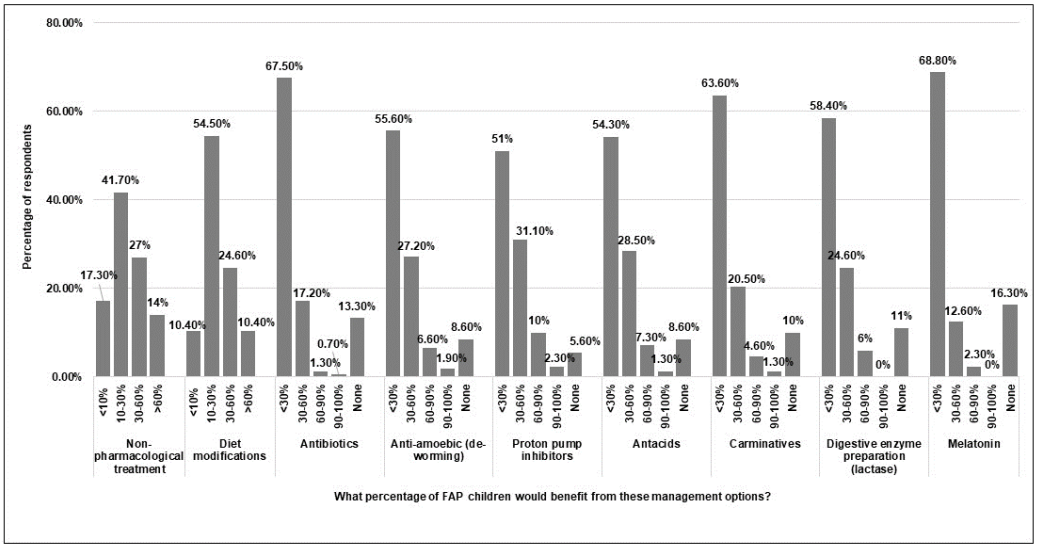

Figure 4: Responses to questions assessing 'attitude' of pediatricians towards FAP treatment strategies. Proportion of patients that respondents believe would benefit from each of the available management strategies.

Practice of FAP diagnosis and management: Most respondents (53%) stated that they used ROME IV criteria to diagnose FAP. Among the investigations requested for confirming FAP, ultrasonography (USG) was preferred by most respondents (74.3%), followed by stool test (58.7%), complete blood count (55.7%), routine urine test (53.7%), and others, while 16.3% respondents stated that they did not order for any investigation. Among the respondents, 79% mentioned that investigations were ordered due to parental pressure in only upto 30% FAP cases (Figure 5).

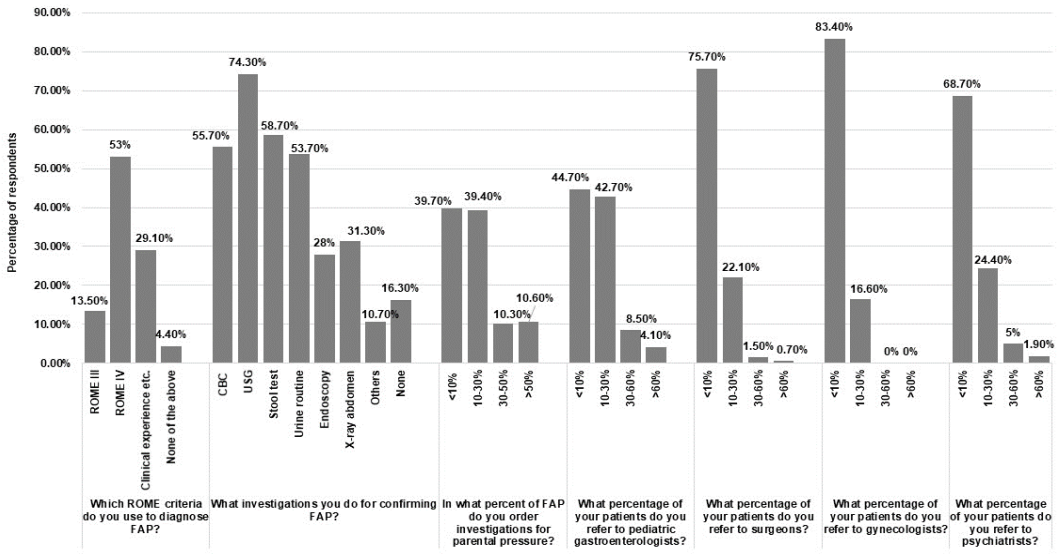

Figure 5: Responses to questions assessing 'practice' measures employed in FAP by pediatricians. General practices followed by pediatricians with respect to adoption of ROME criteria, investigations ordered for FAP diagnosis, and referral to cross-specialties.

For FAP management, the diet modification most commonly advised by respondents was inclusion of high fiber food (82.3%). Other approaches opted for were milk elimination (42.5%), fluids therapy (38.1%), etc. Pharmacological therapy was used by 77% respondents in upto 30% of children diagnosed with FAP. Probiotics were advised by 67.3% respondents in ≤20% patients, and most respondents (67.3%) used single strains. The percentage of respondents who prescribed *L. reuteri*, *S. boulardii*, *L. rhamnosus* GG, and *B. clausii* was 22.1%, 15.4%, 15.4%, and 14.4%, respectively. Combination of probiotics was prescribed by 32.6% respondents. For pain management, most respondents (75.6%) advised antispasmodics. Referral to specialists such as pediatric gastroenterologists, surgeons, gynecologists, or psyhciatrists was done for very few (<10%) FAP patients by most respondents (Figure 6).

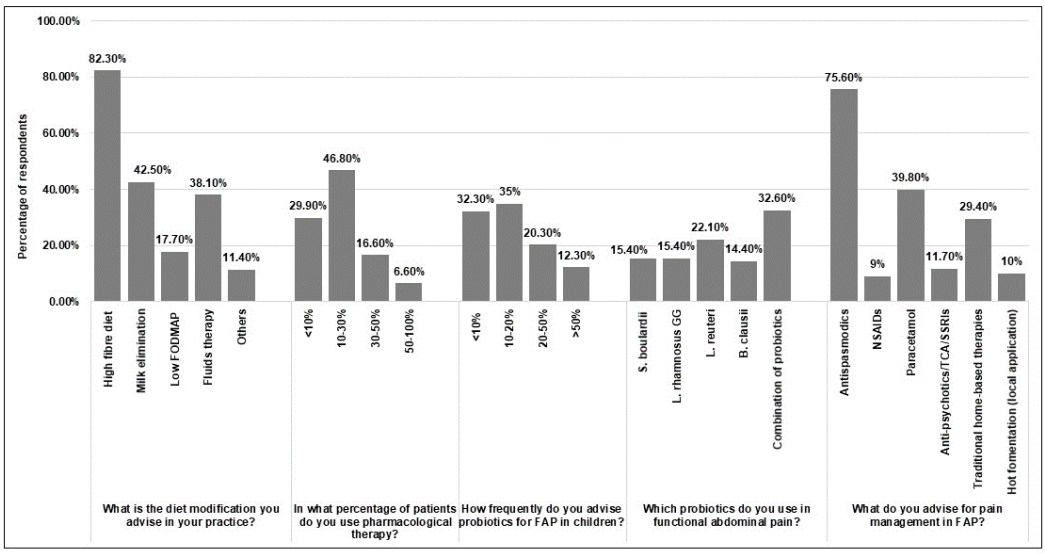

Figure 6: Responses to questions assessing 'practice' measures employed by pediatricians in FAP treatment. Therapies commonly prescribed by pediatricians for FAP management.

DISCUSSION

Despite the magnitude of the problem of FAP in children, there is limited literature on its diagnosis and treatment in India. With ROME IV criteria coming into effect, definition and diagnostic criteria for FAP were revised [4]. We conducted this survey hoping to gain insight into the current state of knowledge, attitude, and practice of pediatricians towards FAP. We analyzed responses of a total of 302 pediatricians to a set of 29 questions pertaining to diagnosis and management of FAP. The respondents hailed from Tier-I/II/III places and practiced in private clinics/government hospitals/corporate hospitals. No appreciable difference in response to any of the questions were evident when respondents were classified based on age, place of practice, and practice setting.

This survey revealed that 74.6% of respondents were aware of the ROME IV criteria for diagnosis of FAP and differentiated between FAP and IBS in practice. However, only 53% used ROME IV criteria in practice. Although only <20% of patients visiting most respondents (49%) had FAP, 41.7% respondents said that 20% to 40% of their patients had FAP. Further studies on evaluating the prevalence of FAP might be useful in determining the actual incidence in India.

FAP diagnosis is made on the first visit by a very few respondents (6.3%). It is plausible that specialists such as pediatric gastroenterologists among the respondents required less time to confirm FAP diagnosis than others. This might be a possible reason why a few respondents were confident of diagnosing FAP in the first visit itself. Most respondents (90.7%) were comfortable in making a FAP diagnosis in second or third visit. Furthermore, the rate of referral to cross-specialties – in case of FAP – was found to be low in India (<10% patients are referred by most respondents to the specialists mentioned in the questionnaire). We believe that clinical practice guidelines might improve pediatricians' approach to FAP diagnosis and perhaps make the diagnosis quicker. Varied investigations are requested in pursuit of a definitive diagnosis, some due to parental pressure as observed in this survey as well as a study from Australia [6]. Guiding principles, for instance, in the form of a flowchart, might enable a consensus amongst pediatricians in this regard. Step-wise delineation of investigations might be useful in selecting the most appropriate investigations customized for a patient based on symptoms and prognosis. This is also important since we have limited data to ascertain if the number of investigations done currently for FAP diagnosis poses any burden on healthcare services and on expenses incurred by the patients' families. Further studies are required to assess the same.

While most respondents agreed that the primary goal of FAP treatment should be a reduction in intensity and frequency of abdominal pain, the approaches of pediatricians varied alongside their attitude towards the approaches. For instance, according to most respondents, only upto 30% patients are expected to improve with any of diet modifications, pharmacological interventions, or non-pharmacological approaches. Probiotics were advised by most respondents in only ≤20% patients. Since these multiple treatment modalities exist for FAP management, we believe that evidence-based guidelines might make the process streamlined and more efficient for pediatricians as well as patients. Similar conclusions were drawn by an earlier KAP study conducted for FAP in Australia [6].

CONCLUSION

This survey provides an overview of the general awareness about FAP among Indian pediatricians and the common approaches used in clinical practice currently. A few key findings from the study are that most respondents used ROME IV criteria for FAP diagnosis, most respondents considered reduction in intensity and frequency of abdominal pain as therapeutic success of FAP management, and most respondents believe that probiotics might be useful in FAP management. Overall, a general awareness about FAP exists among Indian pediatricians; however, a consensus in diagnosis and management is lacking and most respondents believe that guidelines might be helpful. The information presented here might guide the development of evidence-based recommendations for FAP diagnosis and management by experts.

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