British Journal of Medicine & Medical Research
16(12): 1-7, 2016, Article no.BJMMR.26709
ISSN: 2231-0614, NLM ID: 101570965

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What Can Physicians Propose to Help Children with Aspecific Cough? Review of the Literature

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Authors' contributions

This work was carried out in collaboration between all authors. Author SL wrote the protocol and wrote the first draft of the manuscript. Authors SV and SL managed the literature searches and analyses of the included articles. Author MDJ participated in the critical appraisal of the literature and the discussion. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2016/26709
Editor(s):
(1) Syed Faisal Zaidi, Department of Basic Medical Sciences, College of Medicine, King Saud Bin Abdulaziz University-HS, National Guard Health Affairs, King Abdulaziz Medical City, Kingdom of Saudi Arabia.
Reviewers:
(1) Guadalupe García-Elorriaga, Instituto Mexicano del Seguro Social, Mexico.
(2) Akobi Oliver Adeyemi, Federal Medical Centre, Bida, Niger State, Nigeria.
Complete Peer review History: http://sciencedomain.org/review-history/15442

Mini-review Article

Received 29th April 2016
Accepted 30th May 2016
Published 20th July 2016

ABSTRACT

Aims: New cough guidelines recommend a wait, watch and review attitude without any prescription of medication. However, practitioner adhesion is low. We aimed to search what alternative physician could proposed to drug prescription and what attitude could be effective.
Study Design: Review of the litterature.
Methodology: The review was performed by two reviewers covering the period from 2008, the date we finished the literature search for our previous guidelines, to March 2015 for guideline, systematic reviews and RCTs. The inclusion criteria were interventions without pharmacological treatment compared with no treatment in coughing children. The target population was the paediatric population between 0 and 18 years old, suffering from cough and not known to be suffering from a specific lung disease.
Results: We found three systematic reviews and two primary articles. Interventions used were honey, placebo, GP's communication skill, and written material given to parents. Outcomes were perception of cough by the parents as assessed by Likert scales, consultation rate and parental literacy. Placebo or honey seemed to be more efficient as regards parents' perception of their

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child's cough. Providing parents with informative, illustrated booklets had an effect on the parents' knowledge and intention to consult about such symptoms.
Conclusion: Our findings support the recommendation of giving information to parents. Placebo seemed to be more efficient than nothing. Its proper use should be specified. There is a need for other studies on which approach works in which circumstances, and when placebo or sugar syrups could be useful.

Keywords: Cough; primary care; children.

1. INTRODUCTION

Coughing children are still challenging for primary care physicians. Cough in children is problematic, although it is often related to self-limiting illness, it affects children's quality of life [1,2], is related to a large consumption of cough and cold remedies, and is a common reason for consulting primary care. The cost burden of acute cough in preschool children on healthcare providers is substantial; the majority of this cost arises from consultations with general practitioners [3]. Guidelines [4,5] for aspecific cough, i.e. cough without evidence of specific aetiology, recommend a wait, watch, and review attitude. The European Medicine Agency (EMA) [6] contra-indicates codeine, and American guidelines [7] avoid cough medicine; however, some recommendations praise the use of honey [8]. Nevertheless, cough and cold medications are still widely used. The rate of non-compliance with the EMA contraindications was 23.8% for parents and 34.5% for pharmacies in a declarative observational study in 2011-2012 in Nice [9]. Regarding peer evaluation of our previous guidelines [10], it also seemed to be difficult for some general practitioners to prescribe nothing. On the other hand, some authors have proposed that placebos can be effective [11,12]. In RCTs (randomised controlled trial) carried out for several cough treatments, no active treatment seemed to be more effective than placebo, but an improvement of the cough in the placebo arm was observed [13].

Cough remains a subjective complaint. Often outcomes in RCTs [14] have evaluated the perception of cough by the parents using a visual scale or descriptive scores, without more objective measurement.

The same complaint of cough can cover different realities. For example, parental anxiety or urban Living [15] are associated with a more frequent consultation rate, which is probably linked with different perceptions of the same reality.

Cough, especially prolonged cough, i.e. lasting more than four weeks, affects the quality of life of children and their parents. Parents feel sorry for their children, especially if there is nothing they cando [1]. The parents also complain of stress and lack of sleep [2,15,16]. Anxiety is worse at night when parents have less control over their child, and children seem to be more helpless [1]. This feeling of losing control and being unable to help their children leads the parents to seek urgent medical advice [1]. In addition, the perceived severity of the cough as well the perception of the benefit of consulting have a role in the decision to consult [17].

Faced with such a subjective complaint leading to major care consumption and affecting the quality of life of many children and their parents, and considering the new EMA recommendation to avoid any cough medicine [8] as well as the American guidelines [7], we searched the literature to look for non- pharmacological interventions that could be effective in treating cough symptoms as reported by the parents, and that could relieve the anxiety of the parents or their need to consult and seek medical advice. Our objective was to find if some interventions or recommendations for non-pharmaceutical treatment could be provided to parents, and on what evidence.

2. METHODOLOGY

A literature review was performed for adaptation of a previous guideline using ADAPT methodology. The review was performed by two reviewers covering the period from 2008, the date we finished the literature search for our previous guidelines, to March 2015. Guideline, systematic reviews and RCTs. Specifically for this question, the inclusion criteria were interventions without pharmacological treatment compared with no treatment in coughing children. The target population was the paediatric population between 0 and 18 years old, suffering from cough and not known to be suffering from a specific lung disease such as asthma of bronchiectasis. All cough outcomes (such as frequency, severity, amount of sputum, improvement in cough symptoms using

continuous and categorical data and different ways of measurement including cough counts, patient questionnaires, physician assessment, quality of life- related questionnaire etc.) were included but the primary outcome search was improvement of cough- related quality of life. We also considered trials in which a reduced consultation rate was the outcome.

The following databases were consulted: GIN, Cochrane with the key words “cough” and “children”; Pubmed was searched from 2008 with the following key words: "cough" [MeSH Terms] AND (Clinical Trial[ptyp] AND ("2008/01/01"[PDAT]: "2015/12/31"[PDAT]) AND ("infant"[MeSH Terms] OR "child"[MeSH Terms] OR "adolescent"[MeSH Terms])).

3. RESULTS

We included four guidelines on cough in children [4,5,8,18], and two reviews [19,20] from 42 Cochrane entries matched our inclusion criteria. Two primary articles [21,22] and one review [23] from 164 Medline entries responded to our clinical question and were included (Table 1).

All of the included trials on placebo used a Likert scale completed by the parents for assessing the importance of the cough as assessed by the parents (see Table 1). Trials related to honey, placebo and communication efficacy suggested that giving a placebo or honey may be more effective on subjective cough symptom scores, including cough frequency perception than nothing. One trial that furnished high quality evidence, and that included 300 preschool children, suggested that honey may be better than placebo for reduction of cough frequency (MD -1.85; 95% Cl -3.36 to -0.33; one study, 300 participants) [21]. One other trial including 120 children also suggested that placebo is more effective than no treatment on cough frequency (MD-0,7; 95% CI: 0,01 to 1,4, on a seven-point Likert scale).

4. DISCUSSION

The results of a systematic review [23] showed that providing parents with informative, illustrated booklets had a positive effect on the consultation rate for upper respiratory tract infections. The results of this review were not pooled because there was too much heterogeneity of interventions and outcomes studied. Our systematic review included a limited number of studies with different interventions as well as different outcomes. We could not pool the results. We found a positive effect on consultation rate for URTI of providing parents with informative, illustrated booklets. Information given before the consultation seemed to be more effective than during the consultation [23]. Studies also found significant improvements of symptom score with placebo, honey or agave syrups compared to no treatment. Guidelines recommended no treatment except watchful waiting and attention to parent’s concerns and expectations. This finding confirms guidelines for providing information to parents but should open the discussion on the role of honey, syrups or placebo.

Looking for the best alternative to cough medicine, our systematic review searched for a wide range of non-pharmacological treatments or attitudes. Our question was still wide and we did not have any specific indexed terms for our search strategies. Our terms focused more on population and clinical problems. Concerning the included studies, the one reviewing the communication interventions [23] could not be pooled because of the variety of interventions used and outcomes assessed. The studies showed a statistically significant effect of interventions on the parents’ knowledge and intention to consult about such symptoms; however, the effect on the consultation rate is more difficult to prove and only one study had significant results (consultations decreased by 13% for cough ($p = 0.013$)). The trial of Paul et al. [22] suggests that honey or agave nectar is as effective as placebo (grape-flavoured water with a caramel colour) and more effective than no treatment. This finding does not exclude a physiological effect of drinking. Moreover, we know nothing about how the study and the medication were presented to the parents, and what communication or support were provided if the parents could find no syrups or placebo when they were asked to give medication to their child. The blinding of the study was partial and perceived cough resolution could be affected by inappropriate communication or the perceived necessity to treat and parents knowing that their child was in the arm receiving no treatment Trials on placebo efficacy have not studied parental expectations regarding the cough. In fact all these RCTs have parental perception of the cough as an outcome scale. None of them have a quality of life scale or cough frequency

Table 1. Included studies

Authors	Population	Design	Intervention	Comparison	Outcome	Results
Mulholland 2009 [20]		Systematic review	Honey/Ozenges	Placebo		No data in favor or against
Oduwole 2014 [19]	N=568; aged from 1 to18; acute cough; ambulatory settings.	Systematic review	Honey/ placebo	No treatment or placebo	Subjective assessment of acute cough	3RCTs: 2 high risk of biasand1 low risk of bias (see Cohen et al).
Cohen 2012 [21]	N=300; Children aged 1 to 5	Randomised Controlled Trial (RCT)	Honey	Silan date extract (same color and structure to honey)	Cough score assessed by a 7 points Likert scale	Honey may be better than placebo for reduction of cough frequency (MD-1.85; 95%CI-3.36 to-0.33;300 participants)
Paul 2014 [22]	120 children between 2 to 47 months	RCT	Placebo (grapejuice)	Nothing	Cough score assessed by a 7 points Likert scale	Significant effect on cough score as assessed by the parents
Andrews 2012 [23]	Children (0-18 years old) with acute upper respiratory tract infection	Systematic review	Interventions concerning parent-doctor interaction	No treatment or alternate treatments	Consultation rate, knowledge related to consultation and ABs prescribing	Interventions with written material have an impact on rate of consultation; consultations by decreased 13% for cough (p=0.013) in intervention group

measurement as outcome. We could assume that parental self-efficacy and perception are linked. Parental support and guidance for such self-limiting disease could probably influence the parental perception of cough. Self-medication without professional advice must also be assessed. What is the effect of placebo with and without medical consultation or pharmacy guidance?

Placebos or syrups could work due to their physiological effects, the effect of time, or a true placebo effect. Regarding the existing literature, in all trials on cough treatment there is always some resolution of the cough in the placebo arms. Eccles et al. explain that the physiological effect of a placebo is due to its sweet nature [11,24]. Previous studies have shown that the perceived efficacy of treatment and parental self-efficacy influence consultation behaviour [25,26]. A qualitative study has shown that parents decided to consult if they see the benefit of receiving a medical evaluation [23]. Parents also wanted information to help them understand and support their illness management. They found a benefit to consulting if they were reassured and gained knowledge. Several parents were seeking treatment other than antibiotics to reduce their child's suffering and the impact of the cough on the child's and the family's life 26. Some authors have proposed that if parents cannot act to deal with the repercussions of the cough and feel there is "nothing to do to help their child", they may be more worried and seek urgent medical care1;17. The parental self-efficacy is related to the parents' experience (13). We can postulate that previous improvement with some syrups can lead to improved self-efficacy when they are used again, and may reduce anxiety and influence evaluation of the symptoms.

Changing GP attitudes to communication and empowering patients has resulted in a reduction of antibiotics prescription for coughing illnesses [27]. The patients' view of a good quality of care in general practice is related to good interpersonal skills from clinicians, including communication and empathy, being involved in care processes, including sharing in decisions, and being supported to self-manage [28].

Care in general practice is complex and an intervention may or may not work depending on the context in which it is applied. The efficacy of giving a placebo or some educational information could depend on many factors related to the patient, the doctor-patient relationship, or characteristics of the community context of care. To understand this we need research addressing the comprehensiveness of care and its complexity. Randomized controlled trials cannot answer every question. It is necessary to choose appropriate methods to investigate what works in which context, and more specifically in our case, when and how a placebo could have an impact and what kind of communication should be provided in which circumstances.

5. CONCLUSION

Our findings support the actual recommendation on cough in the paediatric population to take into account parents' needs and anxiety and inform them about the natural resolution of cough. Placebo or honey seemed to be more effective on cough score than no treatment. The role of sugar syrups or placebo still needs to be investigated, and it is necessary to discover in which context and with which patients they could be useful.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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