

Divergences in chronic cough management among healthcare professionals in Southern Italy: A comprehensive survey

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ABSTRACT

INTRODUCTION Chronic cough (CC) presents a widespread and intricate challenge for diagnosis and treatment, revealing a significant lack of information on medical strategies. This study aims to gather insights from different practitioners in Southern Italy regarding their views and methodologies towards CC.

METHODS The investigation engaged 102 medical practitioners from Southern Italy, encompassing 23 general practitioners, 30 pulmonologists, 25 allergologists, and 24 otolaryngologists. It examined their understanding, attitudes, and approaches towards managing CC, with an emphasis on diagnostic processes, treatment preferences, and adherence to guidelines.

RESULTS The findings highlight distinct variations in the management of chronic cough among different medical specialists. Notably, otolaryngologists and pulmonologists tend to categorize chronic cough as lasting for more extended periods than allergists and general practitioners. Pulmonologists, in particular, are more prone to suggest chest X-rays for chronic cough patients, reflecting their focus on lung-related conditions. In terms of the primary causes of CC, allergists and pulmonologists often attribute it to asthma, general practitioners to gastro-esophageal reflux disease, and otolaryngologists to upper airways cough syndrome. Pulmonologists are also observed to have the most comprehensive awareness of the various conditions associated with coughing, which is likely due to their specialization in respiratory health.

CONCLUSIONS The research underscores the necessity for enhanced education and standardized procedures among healthcare providers in Southern Italy for managing CC, highlighting the importance of interdisciplinary cooperation and customized treatment plans to improve the outcomes for patients with CC and guide future therapeutic strategies.

INTRODUCTION

Chronic cough, a prevalent and often vexing clinical complaint, poses significant diagnostic and therapeutic challenges in healthcare settings¹. Characterized by its persistence beyond eight weeks, chronic cough not only affects the physical well-being of patients but also significantly impairs their quality of life, including sleep and social interactions^{1,2}. The multifactorial etiology of chronic cough, encompassing conditions like asthma, gastro-esophageal reflux disease, and upper airway cough syndrome, necessitates a comprehensive and multidisciplinary approach for effective management^{3,4}.

In the realm of respiratory medicine, the management of chronic cough represents a paradigm of the complexities involved in diagnosing and treating conditions with multifaceted causes. The variability in clinical presentation and underlying etiologies requires healthcare professionals to

employ a broad spectrum of diagnostic tools and therapeutic interventions, guided by clinical guidelines that aim to standardize care^{3,4}. Despite these guidelines, significant variability exists in the practices adopted by clinicians, influenced by factors such as specialty, clinical experience, and regional healthcare practices.

The significance of chronic cough extends beyond the individual to have a broader impact on healthcare systems, contributing to increased healthcare utilization, diagnostic testing, and treatment trials, often with limited success⁵. This underscores the need for a better understanding of current practices and challenges faced by healthcare professionals in managing chronic cough, to identify gaps in knowledge and practice that may contribute to suboptimal patient outcomes.

The rationale for this study stems from the observed variability in the management of chronic cough and the limited data on the practices and perceptions of healthcare

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professionals in Southern Italy. By exploring the approaches adopted by general practitioners, pulmonologists, allergologists, and otolaryngologists in this region, this survey aims to shed light on the diversity of practices in chronic cough management, the adherence to clinical guidelines, and the potential need for targeted educational interventions to harmonize care practices. In doing so, the study seeks to contribute to the broader discourse on optimizing chronic cough management, with a view toward enhancing patient care and outcomes in this challenging clinical area.

METHODS

Study design and participants

This cross-sectional survey study was conducted among healthcare professionals in Southern Italy, aiming to assess their knowledge, attitudes, and practices in the management of chronic cough. The study included a total of 102 participants, comprising 23 general practitioners, 30 pulmonologists, 25 allergologists, and 24 otolaryngologists. Participants were selected based on their involvement in the diagnosis and treatment of chronic cough in their respective fields. This research adhered to the standards of good clinical practice and the ethical guidelines set forth in the Declaration of Helsinki. Given the study design, obtaining formal ethical committee approval was deemed unnecessary. Every participant provided written consent to take part in the survey.

Survey instrument

A structured 12-item questionnaire was developed by a panel of experts in respiratory medicine, epidemiology, and survey methodology (Table 1). The questionnaire encompassed several key areas:

- Definition of chronic cough: participants were asked to define chronic cough, specifically the duration of cough that they considered as 'chronic'.
- Diagnostic approach: questions related to the diagnostic tests and criteria used by the healthcare professionals when evaluating a patient with chronic cough.
- Treatment preferences: the survey inquired about the first-line and second-line treatment options preferred by the participants for managing chronic cough.
- Guideline adherence: participants were questioned about their awareness of and adherence to existing chronic cough management guidelines^{3,4}.
- Educational needs: the survey assessed the participants' interest in and perceived need for further training on chronic cough management.

The survey was distributed electronically to the healthcare professionals, with a completion period of one month. Reminders were sent bi-weekly to encourage participation. Participation was voluntary, and responses were anonymized to ensure confidentiality.

Statistical analysis

Descriptive statistics were used to summarize the demographic characteristics of the participants and their responses to the survey questions. Chi-squared tests were performed to examine the differences in responses among the different specialties. A p-value <0.05 was considered statistically significant. We conducted a Monte Carlo simulation to assess the simulated p-value for the chi-squared test, executing 2000 repetitions to ensure robust statistical analysis. All statistical analyses were conducted using R software (The R foundation, Austria) version 4.3.

RESULTS

The survey was completed by 102 healthcare professionals (out of 335 total invitations), consisting of 23 general practitioners (22.33%), 30 pulmonologists (29.13%), 25 allergologists (24.27%), and 24 otolaryngologists (23.27%). The distribution of participants reflects a well-balanced representation of specialties involved in chronic cough management.

The survey results revealed variability in the definition of chronic cough among specialties. The majority of pulmonologists (39.81%) and otolaryngologists (33.01%) defined chronic cough as a cough persisting for more than 8 weeks, aligning with common clinical guidelines. In contrast, a significant proportion of allergologists (15.53%) and general practitioners (11.65%) considered a shorter duration sufficient to classify the cough as chronic.

Diagnostic strategies varied notably among the surveyed groups. Pulmonologists showed a higher propensity (86.41%) to recommend chest X-rays for chronic cough patients, reflecting their focus on respiratory pathologies. In contrast, fewer allergologists (22.5%), general practitioners (22.5%), and otolaryngologists (23.6%) reported routinely recommending chest X-rays.

Regarding treatment preferences, significant differences were observed. Inhaled corticosteroids (ICS) were the most commonly prescribed first-line treatment by pulmonologists (44.66%) and otolaryngologists (30.4%), while general practitioners favored proton pump inhibitors (37.86%), reflecting the varied perceived etiologies of chronic cough among specialties.

Interestingly, while most participants reported moderate to high awareness of chronic cough management guidelines, there was a notable interest in further education and training across all specialties, with 36.89% expressing a high interest in receiving additional training on chronic cough management.

Finally, chi-squared tests indicated differences in the definition of chronic cough ($\chi^2=10.58$, $p=0.30$), diagnostic approaches ($\chi^2=2.22$, $p=0.52$), and treatment preferences ($\chi^2=14.04$, $p=0.02$) among the different specialties, although only the last reached statistical significance. These differences underscore the variability in chronic cough management practices. Table 1 summarizes all the above-mentioned findings.

Table 1. Contingency table with representation of the absolute and relative frequency distribution

Practitioners	n (%)	n (%)	n (%)	n (%)	n (%)	p ^a
Q1: Definition of chronic cough timing						0.30 (0.32)
	1 week	4 weeks	6 weeks	8 weeks		
Allergologist	1 (8.3)	4 (25.0)	11 (32.4)	9 (22.0)		
General practitioners	2 (16.7)	7 (43.8)	6 (17.6)	8 (19.5)		
Otolaryngologists	5 (41.7)	2 (12.5)	9 (26.5)	9 (22.0)		
Pulmonologist	4 (33.3)	3 (18.8)	8 (23.5)	15 (36.6)		
Q2: Time dedicated to a patient visit						0.69 (0.71)
	10 min	15 min	20 min	30 min	60 min	
Allergologist	3 (23.1)	7 (25.9)	9 (28.1)	5 (20.8)	1 (14.3)	
General practitioners	6 (46.2)	6 (22.2)	6 (18.8)	3 (12.5)	2 (28.6)	
Otolaryngologists	3 (23.1)	7 (25.9)	6 (18.8)	7 (29.2)	2 (28.6)	
Pulmonologist	1 (7.7)	7 (25.9)	11 (34.4)	9 (37.5)	2 (28.6)	
Q3: Recommendation for chest x-ray						0.52 (0.55)
	No	Yes				
Allergologist	5 (35.7)	20 (22.5)				
General practitioners	3 (21.4)	20 (22.5)				
Otolaryngologists	4 (28.6)	21 (23.6)				
Pulmonologist	2 (14.3)	28 (31.5)				
Q4: Time to identify underlying cause						0.69 (0.71)
	1 month	12 months	24 months	6 months		
Allergologist	5 (17.9)	5 (27.8)	2 (33.3)	13 (25.5)		
General practitioners	7 (25.0)	4 (22.2)	2 (33.3)	10 (19.6)		
Otolaryngologists	5 (17.9)	6 (33.3)	2 (33.3)	12 (23.5)		
Pulmonologist	11 (39.3)	3 (16.7)	0 (0)	16 (31.4)		
Q5: First cause that comes to mind						0.02 (0.02)*
	Asthma	GERD	UACS			
Allergologist	8 (25.0)	12 (27.9)	5 (17.9)			
General practitioners	4 (12.5)	13 (30.2)	6 (21.4)			
Otolaryngologists	5 (15.6)	8 (18.6)	12 (42.9)			
Pulmonologist	15 (46.9)	10 (23.3)	5 (17.9)			
Q6: First-line treatments prescribed						0.28 (0.27)
	Bronchodilators	Gabapentin	ICS	PPI	Pregabalin	
Allergologist	2 (14.3)	1 (33.3)	10 (21.7)	12 (30.8)	0 (0)	
General practitioners	2 (14.3)	2 (66.7)	8 (17.4)	11 (28.2)	0 (0)	
Otolaryngologists	5 (35.7)	0 (0)	14 (30.4)	5 (12.8)	1 (100)	
Pulmonologist	5 (35.7)	0 (0)	14 (30.4)	11 (28.2)	0 (0)	

Continued

Table 1. Continued

Practitioners	n (%)	n (%)	n (%)	n (%)	n (%)	p ^a
Q7: Second-line therapy (single answer)						0.37 (0.39)
	Bronchodilators	ICS	PPI	Pregabalin		
Allergologist	13 (34.2)	8 (26.7)	3 (12.5)	1 (12.5)		
General practitioners	9 (23.7)	9 (30.0)	3 (12.5)	2 (25.0)		
Otolaryngologists	6 (15.8)	6 (20.0)	8 (33.3)	3 (37.5)		
Pulmonologist	10 (26.3)	7 (23.3)	10 (41.7)	2 (25.0)		
Q8: Awareness of nosological entities						0.00067 (0.001)*
	No	Yes, 1	Yes, 2	Yes, all		
Allergologist	2 (20.0)	3 (16.7)	9 (36.0)	11 (22.4)		
General practitioners	5 (50.0)	6 (33.3)	3 (12.0)	8 (16.3)		
Otolaryngologists	3 (30.0)	9 (50.0)	6 (24.0)	7 (14.3)		
Pulmonologist	0 (0)	0 (0)	7 (28.0)	23 (46.9)		
Q9: Impact on patient's quality of life						0.15 (0.16)
	Severe	Mild	Moderate	Very Severe		
Allergologist	9 (27.3)	5 (31.2)	6 (14.0)	5 (45.5)		
General practitioners	6 (18.2)	5 (31.2)	10 (23.3)	2 (18.2)		
Otolaryngologists	11 (33.3)	4 (25.0)	8 (18.6)	2 (18.2)		
Pulmonologist	7 (21.2)	2 (12.5)	19 (44.2)	2 (18.2)		
Q10: Impact on sleep deprivation						0.02 (0.01)*
	Severe	Mild	Moderate	Very Severe		
Allergologist	10 (28.6)	5 (35.7)	4 (10.8)	6 (35.3)		
General practitioners	5 (14.3)	5 (35.7)	9 (24.3)	4 (23.5)		
Otolaryngologists	11 (31.4)	2 (14.3)	6 (16.2)	6 (35.3)		
Pulmonologist	9 (25.7)	2 (14.3)	18 (48.6)	1 (5.9)		
Q11: Knowledge of guidelines for chronic cough treatment						0.83 (0.85)
	High	Moderate	Modest	Low		
Allergologist	5 (35.7)	8 (25.8)	7 (22.6)	5 (18.5)		
General practitioners	3 (21.4)	5 (16.1)	8 (25.8)	7 (25.9)		
Otolaryngologists	4 (28.6)	8 (25.8)	5 (16.1)	8 (29.6)		
Pulmonologist	2 (14.3)	10 (32.3)	11 (35.5)	7 (25.9)		
Q12: Interest in receiving training for chronic cough management						0.02 (0.03)*
	High	Moderate	Modest	Low		
Allergologist	9 (23.7)	5 (16.1)	8 (42.1)	3 (20.0)		
General practitioners	12 (31.6)	4 (12.9)	1 (5.3)	6 (40.0)		
Otolaryngologists	5 (13.2)	9 (29.0)	7 (36.8)	4 (26.7)		
Pulmonologist	12 (31.6)	13 (41.9)	3 (15.8)	2 (13.3)		

UACS: upper airway cough syndrome. GERD: gastroesophageal reflux disease. ICS: inhaled corticosteroids. PPI: proton pump inhibitor. ^a The p-value and simulated p-value (in brackets) are reported for each question. *p<0.05.

DISCUSSION

This comprehensive survey of healthcare professionals in Southern Italy reveals a multifaceted approach to chronic cough (CC) management, underscoring significant variability in diagnostic and treatment practices among different specialties. These findings align with global trends, suggesting a universal need for standardization in CC management.

The observed variability in the definition of CC among healthcare professionals in Southern Italy mirrors the lack of consensus observed globally^{6,7}. Studies, including a web-based survey in Japan⁶, have highlighted similar discrepancies, emphasizing the need for a unified definition to facilitate more consistent diagnoses and management strategies. The Japanese study reported a point prevalence of CC at 2.89%, reflecting the substantial burden of CC, similar to our findings in Southern Italy⁶. The common attribution of CC to conditions like asthma and allergic rhinitis in both studies suggests a universal pattern in the etiological understanding of CC among healthcare professionals. Similarly, a study on Canadian pulmonary rehabilitation (PR) programs found that although chronic cough is common among patients, its systematic assessment and management are limited⁷. Only 45% of programs assess and 62% manage chronic cough, mainly using patient history for assessment and non-pharmacological strategies like breathing exercises for management. The lack of knowledge on cough management among healthcare professionals was identified as a significant barrier, highlighting the need for enhanced educational efforts to improve cough management in PR settings⁷.

Diagnostic approaches varied notably among specialties in our survey, with pulmonologists more inclined to utilize chest X-rays. This is consistent with the literature suggesting that the choice of diagnostic tests often aligns with the perceived common etiologies within each specialty's domain⁵. The underutilization of comprehensive guidelines, as seen in our survey, has been a recurring theme in the literature, indicating a global gap between guideline recommendations and clinical practice^{3,4}. This gap underscores the importance of enhancing guideline dissemination and education to ensure more evidence-based approaches to CC management.

Treatment preferences among healthcare professionals in Southern Italy demonstrated a reliance on specialty-specific perceived etiologies, such as inhaled corticosteroids by pulmonologists and proton pump inhibitors by general practitioners. This specialty-centered approach to treatment is reflected in the literature, with studies indicating a diverse range of treatments based on varying etiological assumptions across different regions^{6,7}. The reliance on a broad spectrum of treatments, with limited consensus on effectiveness, highlights the critical need for multidisciplinary collaboration and adherence to evidence-based guidelines to optimize patient outcomes.

Our findings also highlight a significant interest among healthcare professionals in Southern Italy for further education and training in CC management. This echoes the sentiments expressed in the Japanese and Canadian surveys^{6,7}, where an unmet need for better diagnosis and treatments among CC patients was evident. The parallel between the desire for enhanced education in Southern Italy and the identified unmet needs in Japan and Canada suggests a global recognition of the complexities surrounding CC management and the need for continuous professional development in this area.

CONCLUSIONS

This survey among healthcare professionals in Southern Italy reveals significant variability in the management of chronic cough, reflecting a broader global challenge. The findings underscore the necessity for standardized protocols, enhanced guideline adherence, and interdisciplinary collaboration to improve CC management. Furthermore, the expressed interest in further education highlights an opportunity to address the existing knowledge and practice gaps through targeted educational initiatives, ultimately aiming to harmonize CC management practices both domestically and globally.

CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for disclosure of Potential Conflicts of Interest and none was reported.

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ETHICAL APPROVAL AND INFORMED CONSENT

Given the study design, obtaining formal ethical committee approval was deemed unnecessary. Participants provided informed consent.

DATA AVAILABILITY

The data supporting this research are available from the authors on reasonable request.

AUTHORS' CONTRIBUTIONS

SD: conceptualization. LM and AM: data collection and data analysis. AP and VNQ: manuscript preparation. GEC: supervision. All authors read and approved the final version of the manuscript.

PROVENANCE AND PEER REVIEW

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