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ORIGINAL RESEARCH

The Interaction Between Asthma, Emotions, and Expectations in the Time of COVID-19

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Introduction: The main aim was to gain insight into the experience of adult people with a diagnosis of at least 6-months of mild or moderate persistent asthma according to the Global Initiative for Asthma (GINA), and their emotions, beliefs, and expectations during the first wave of COVID-19.

Methods: Qualitative semi-structured interviews using the Interpretative Phenomenological Analysis (IPA) were carried out by phone involving 31 people (mean age=58.2; SD=16.2). Interviews were audio recording, transcribed verbatim and analysed through thematic analysis.

Results: Five superordinate themes and themes were dedicated to illness (symptoms of asthma; difficulties related to COVID-19), experienced emotions (lockdown period; medical changes; emotions COVID-19 related), beliefs (about asthma; about COVID-19), expectations (related to asthma; related to COVID-19) and behaviours (to protect; risk taken; adherence; contacts with General Practitioners; support). The prevalence of emotions such as fear, worry and anxiety emerged in the participants' narratives. All are accompanied by a preference for action and problem solving. A sense of protection, connection to self and other, and commitment to life were revealed as central concepts for enhancing well-being even at a time of deterring.

Discussion: The common threads of the presence of uncertainty and vulnerability open the outlook of a treatment that ensures greater continuity and ownership of care in the patient, preserving the sense of self-efficacy even in times of greater instability.

Keywords: asthma, interpretative phenomenological analysis, COVID-19, clinical psychology

Introduction

Since the beginning of its spread, the COVID-19 pandemic, which emerged at the end of 2019, has been considered particularly threatening to people in fragile conditions, such as the elderly, with multiple diseases, especially respiratory diseases, who already have higher levels of stress, anxiety, and depression.

There were more than 262 million people in 2019 worldwide who suffered from asthma, and it has been hypothesized that it caused 461,000 deaths.[1] The symptoms and their worsening are associated with the limitation of functional and physical activities in work, relational and social problems, as well as a significant reduction in Quality of Life (QoL). Compared to the general population, also before the pandemic, there was a six-fold increase in anxiety,[2,3] panic disorder,[4] and depression.[5,6] In addition, it has been shown that people with severe asthma, which is more difficult to manage and control, are often characterized by a greater number of comorbidities and poly-pharmacology or poly-treatment, which in turn decrease levels of adherence, QoL and contribute to the use of maladaptive coping strategies.[5] Therefore, the subjective well-being of people with asthma is considerably tested by the experience of their symptoms and treatments,[7] resulting in a vicious circle, in elevated healthcare costs and potential health complications.[8] This situation worsened considerably during the pandemic period, causing many people with asthma to even avoid check-ups or access to treatment services for fear of contracting the virus,[9,10] and resulting in relevant control pipelines and frantic cleaning.[11] Lackwik et al[12] found that high levels of state and trait anxiety play a significant role as potential factors for loss of control in the management of asthma-related symptoms, resulting in a consequent decline in Health-Related Quality of

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Life (HRQoL). However, most studies have focused on anxiety, depression, and QoL[10,13,14] to describe and improve healthcare services that promote well-being among people with asthma during the pandemic period, providing few indicators about the beliefs, expectations, and emotional experiences of people with asthma about the pandemic moment.

Study Aims

The current study sought to explore the experience of people with asthma and the interaction between asthma, emotions, beliefs, and expectations during the first wave of COVID-19, when the lockdown was also required, to identify specific patterns of thinking and behaviour.

Methods

Ethics

The project was conducted following the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of the Università Cattolica del Sacro Cuore (cod. 35–18, 21/12/2018), in Milan (Italy). The consent form was shared before undertaking the interview according to Italian Law 196/2003 on Privacy and Safeguarding of Sensitive Data and the GDPR of the European Union 2016/679. The participants informed consent included publication of anonymized responses.

Patient and Public Involvement

Patients were involved in the recruitment, reporting, and dissemination plans of this research. Results and publication of the research will be disseminated to all study participants via email. Refer to the subparagraphs of the Methods section for further details.

Study Design

This was a qualitative study using Interpretative Phenomenological Analysis (IPA),[15] conducted and reported following the Consolidated Criteria for Reporting Qualitative Research (COREQ).[16]

Inclusion and Exclusion Criteria

Participants were included in case of a confirmed diagnosis of at least 6-months of mild or moderate persistent asthma according to the Global Initiative for Asthma (GINA)[17] by the pulmonologist; adults; they spoke Italian; non-pregnant; without serious comorbidities (eg, cancer, immunosuppressive conditions) or an impaired mental condition based on available medical records.

Recruitment

Consistent with IPA's idiographic approach,[15] sampling focused on recruiting a specific and heterogeneous group, according to the listed criteria.[17] To reduce the potential for biases, a random sampling procedure was adopted using the system promoted by random.org. A consecutive series of 118 adult people with a confirmed diagnosis by the Pulmonologist were randomly selected from the outpatient accesses of the XXX of the XXX, in XX (XX) and were invited to take part in the study by email. Sampling is concluded upon reaching data saturation.

Data Collection

Participants were recruited during the period between the first and the second wave of COVID-19, between 15th March and 30th June 2020. Due to the health emergency, the meeting took place either by phone or through a platform enabling video calls. All interviews were conducted by a registered psychologist (EV) who was specially trained in both the handling of the clinical relationship and the use of the IPA. They were all audio-recorded and lasted approximately 30 minutes.

The interviews were semi-structured, exploring the experiences of living with asthma at the time of COVID-19 and paying attention to the relationship between asthma symptoms, emotions, cognitions, beliefs, and expectations. According to IPA, the interviewer was free to probe interesting areas that arose as well as she could follow the

respondent's interests or concerns, monitoring the effects of the answers on the respondent.[15] Field notes, which supplemented analysis, were taken after conducting each interview. The structure of the interview is shown in Table 1.

Data Analysis

IPA allows access to the respondent's inner world, in the form of both beliefs and parts of identity that are made manifest or suggested by the respondent's speech. The meaning that the respondent ascribes is central and unique and the aim is to try to understand the content and complexity of this rather than to measure its frequency.[18]

The researchers gave space throughout the analysis process to reflexivity, encouraging them to understand how their point of view could impact the research itself, preventing personal experiences and one's prejudices from influencing the results.[19]

Using NVivo software (QSR International®, version 12) and following the IPA approach,[15] the analysis was developed through six different phases: Reading and re-reading; Coding; Clustering; Iteration; Narration; Contextualisation.

Once heard and transcribed verbatim, the researchers (EV; FP) initially coded them separately to ensure internal consistency. The themes that emerged were then discussed until the final themes were outlined. A third researcher (PB) intervened to resolve any doubts and reconciled differences.

Results

Participant Demographics

Thirty-one candidates participated in the study. Three people replied to the email denying their availability for personal reasons at the time (eg, illness). The others did not reply. Among those who did not respond to the invitation, we know that the mean age is 57.2 (SD=15) and there are 54 women and 30 men.

Table 1 Semi-Structure Interview Schedule

Semi-Structure Interview Guide
1. How is this period going?
2. How were the previous months when the situation was more drastic (ie during the first lockdown)?
3. I imagine that during this period you have repeatedly sought information about the virus and followed the news about the progress of the epidemic. Which source were you most satisfied with?
4. In your opinion, what are the chances of contracting Covid-19 in the coming months if you do not take the right preventive measures?
5. In your opinion, does Covid-19 have a different impact on asthmatic and non-asthmatic people?
6. In your opinion, does being an asthmatic put you at greater risk of contracting Covid-19 than non-asthmatic people of your age?
7. Faced with the possibility of contracting Covid-19 in the coming months, what are your prevailing emotions?
8. In your opinion, how much the preventive measures taken during this period (eg social distancing, masks, gloves, hand hygiene, etc.) are adequate in preventing and controlling the infection?
Possible prompts: 8.1. In your case, which preventive measures did you find most difficult to adopt? 8.2. In the coming months, when the restrictive measures will no longer be so strict, do you think you will continue to wear protective equipment and adopt cautious behaviour even if not explicitly requested?
9. What is your perception of your ability to cope sufficiently effectively and calmly with the current and future situation?
Possible prompts: 9.1. Do you feel confident enough or do you think that the difficulties will be too great/too heavy?
10. Have you been able to have a check-up with your doctor during this period as planned?
Possible prompts: 10.1. How did this situation make you feel?
11. During this period, did you feel the need to contact your doctor for further information and clarification about Covid-19?
12. During this time, how has the way you manage your illness changed?

Table 2 shows the main socio-demographic characteristics of those who took part in the study, while Table 3 shows some clinical characteristics of participants' asthma.

Overall, the words most frequently used by the participants were, in order: "period" (260 references; 0.59% coverage); "covid" (219 references; 0.50% coverage); "measures" (132 references; 0.30% coverage); "people" (132 references; 0.30% coverage); "mask" (123 references; 0.28% coverage).

Table 2 Participants' Socio-Demographic Characteristics, Lifestyle, and COVID-19

Variables		**N(%)**	**M(SD)**
Total (N)		31 (100%)	
Age (M, SD)			58.2 (16.2)
Gender (n, %)	Men	9 (29%)	
	Women	22 (71%)	
Marital Status (n, %)	Married	17 (56.7%)	
	Divorced	0	
	Separated	2 (6.7%)	
	Single	6 (20%)	
	Widower	4 (13.3%)	
	Other	1 (3.3%)	
Education (n, %)	Primary School	0	
	Secondary School	3 (9.7%)	
	High School	12 (38.7%)	
	Bachelor's degree	15 (48.4%)	
	Master's degree	1 (3.2%)	
	Other Specialisations (eg, PhD)	0	
Profession/job (n, %)	Employee	5 (16.1%)	
	Self-employed	3 (9.7%)	
	Unemployed	1 (3.2%)	
	Students	0	
	Retired	12 (38.7%)	
	Teacher	3 (9.7%)	
	Other	8 (24.8%)	
Smoke	Yes	2 (6.45%)	
	No	20 (64.5%)	
	Ex	8 (25.8%)	
	No answer	1 (3.2%)	
Physical Activity	Yes	19 (61.3%)	

(*Continued*)

Table 2 (Continued).

Variables		N(%)	M(SD)
	No	11 (35.5%)	
	Ex	1 (3.2%)	
Frequency of physical activity	Always	5 (16.1%)	
	Often (2 or 3 times/week)	10 (32.25%)	
	Sometimes (1 time/week)	3 (9.7%)	
	Never	13 (41.9%)	
Kind of physical activity	Hiking	3 (9.7%)	
	Swimming	1 (3.2%)	
	Running	2 (6.45%)	
	Cycling	2 (6.45%)	
	Yoga	1 (3.2%)	
	More than 1 kind of activity	9 (29%)	
Contracted COVID-19 (n, %)	Yes, proven by swab/serology positive	0	
	I think so (compatible symptoms, but no swab/serology)	0	
	No	31 (100%)	
How severe was the COVID-19 (n, %)	I have been admitted to a clinical facility	0	
	I have had symptoms comparable to flu	0	
	I had very mild symptoms	0	
	I did not have any symptoms	0	
	I had no symptoms	0	
Relatives who have contracted COVID-19	Yes	2 (6.4%)	
	No	27 (87%)	
	No answer	2 (6.4%)	
Have you ever had a serious reaction after receiving a vaccine (n, %)	Yes	0	
	No	31 (100%)	
Do you suffer from heart or lung disease, asthma, kidney disease, diabetes, anaemia or other blood disorders? (n, %)	Yes	4 (12.9%)	
	No	27 (87%)	

(*Continued*)

Table 2 (Continued).

Variables		N(%)	M(SD)
Do you have a compromised immune system? (Example: cancer, leukaemia, lymphoma, HIV/AIDS, transplant)? (n, %)	Yes	0	
	No	0	

Abbreviations: M, Mean; SD, Standard Deviation; N, Number.

Table 3 Information on the Clinical Status of Participants

Variables		N(%)	M (SD)
Pulmonary function parameters (M, SD)			
FVC (M, SD)			21.84 (9.7)
FVC% (M, SD)			91.03 (1.5)
FEV1 (M, SD)			17.23 (0.04)
FEV1% (M, SD)			86.68 (1.7)
TIF% (M, SD)			91.57 (7.3)
Severity of Asthma (N, %)			
	Mild Persistent Asthma	17 (58.8)	
	Moderate Persistent Asthma	14 (45.2)	
Type of Asthma (N, %)			
	Extrinsic Asthma	20 (64.5)	
	Intrinsic Asthma	11 (35.5)	
Most common allergies (N, %)			
	Pollen	3 (9.7)	
	Mugwort	7 (22.6)	
	Mites	9 (29)	
	Grasses	2 (6.4)	
	Cypress	5 (16.1)	
	Ragweed	2 (6.4)	
	Dog	5 (16.1)	
	Cat	2 (6.4)	
	Other plants	3 (9.7)	
Pet at home (N,%)			
	Yes	7 (22.6)	
	No	11 (35.5)	

(*Continued*)

Table 3 (Continued).

Variables		N(%)	M (SD)
	In the past	13 (41.9)	
Comorbidities (N, %)			
	Bronchiectasis	3 (9.7)	
	Hypertension	3 (9.7)	
	Hypotension	1 (3.22)	
	Glaucoma	2 (6.4)	
	Gastroesophageal reflux	2 (6.4)	
	Rhinitis/Oculorinitis	2 (6.4)	
	Turban hypertrophy	2 (6.4)	
	Nasal polyposis	2 (6.4)	
	Otosclerosis in bilateral hearing loss	1 (3.22)	
	Mitral insufficiency	1 (3.22)	
	Nothing to report	12 (38.7)	
Medications (N, %)			
	Inhaled Corticosteroids (ICS)	16 (51.6)	
	Long-Acting Beta-Agonists (LABAs)	3 (9.7)	
	Leukotriene Modifiers	10 (32.2)	
	Long-Acting Muscarinic Antagonists (LAMAs) or anticholinergic bronchodilators	4 (12.9)	
	Desloratadine for Allergy Control	5 (16.1)	

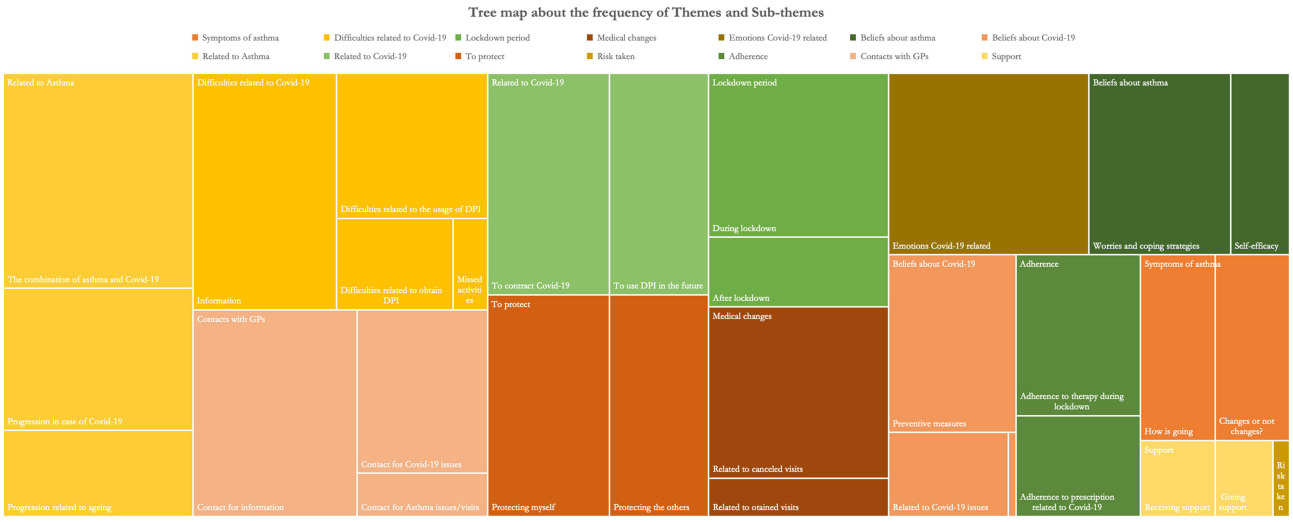
Abbreviations: M, Mean; SD, Standard Deviation; N, Number; FVC, Forced Vital Capacity; FVC%, Percentage of Forced Vital Capacity; FEV_1, Forced Expiratory Volume in the 1st second; FEV1%, Percentage of Forced Expiratory Volume in the 1st second; TIF %, Percentage of Tiffeneau-Pinelli index.

Superordinated Themes

The superordered themes were "illness", "experienced emotions", "beliefs", "expectations", and "behaviours". Each superordinate theme is characterised by the presence of specific themes and sub-themes. Figure 1 reports the structure of superordinate themes, themes, and sub-themes, as well as the frequencies with which the different themes emerged.

The superordinate theme of "illness" refers to how one's illness is perceived in terms of signs and symptoms and whether changes have been noticed. "Experienced emotions", instead, allows denoting the inner experiences of people with asthma during and following the period of the first lockdown, as well as those related to cancellations or the possibility of obtaining a medical examination. The superordinate themes of "beliefs" and "expectations" are configured around the progressions and characteristics of asthma and COVID-19. Finally, the superordinate theme of "behaviour"

Super-ordinate themes	Themes	Sub-themes	Referral (N)	N, Percentage of participants (%)
Illness	Symptoms of asthma	How is going	22	18 (58.06%)
		Changes or not changes?	22	17 (54.83%)
	Difficulties related to Covid-19	Difficulties related to the usage of DPI	35	22 (70.96%)
		Difficulties related to obtain DPI	17	13 (41.93%)
		Missed activities	5	3 (9.67%)
		Information	54	28 (90.32%)
Experienced emotions	Lockdown period	During lockdown	47	21 (67.74%)
		After lockdown	20	12 (38.70%)
	Medical changes	Related to canceled visits	49	26 (83.87%)
		Related to otained visits	11	7 (22.58%)
	Emotions Covid-19 related		58	27 (87.09%)
Beliefs	Beliefs about asthma	Self-efficacy	17	17 (54.83%)
		Worries and coping strategies	41	20 (64.51%)
	Beliefs about Covid-19	Preventive measures	36	25 (80.64%)
		Acceptance	1	2 (6.45%)
		Related to Covid-19 issues	16	10 (3.22%)
Expectations	Related to Asthma	The combination of asthma and Covid-19	65	29 (93.54%)
		Progression related to ageing	26	22 (70.96%)
		Progression in case of Covid-19	43	27 (87.09%)
	Related to Covid-19	To contract Covid-19	43	27 (87.09%)
		To use DPI in the future	35	25 (80.64%)
Behaviours	To protect	Protecting myself	43	20 (64.51%)
		Protecting the others	35	11 (35.48%)
	Risk taken		2	2 (6.45%)
	Adherence	Adherence to therapy during lockdown	32	22 (70.96%)
		Adherence to prescription related to Covid-19	20	18 (58.06%)
	Contacts with GPs	Contact for information	54	28 (90.32%)
		Contact for Covid-19 issues	34	26 (83.87%)
		Contact for Asthma issues/visits	9	9 (29.03%)
	Support	Receiving support	9	5 (16.12%)
		Giving support	7	4(12.90%)



Notes. Referral (N)= Number of referrals of that theme in the interviews; Percentage of participants (%) = Percentage of participants who referred to that theme

Figure 1 The referral and percentage of superordinate themes, themes and sub-themes in this dataset.

reveals the actions taken towards oneself and others to protect oneself from the virus, and in adhering to asthma treatment prescriptions (Table 4). Table 5 shows the distribution of themes and sub-themes in relation to the type of asthma.

From Superordinate Themes to Themes and Sub-Themes

Illness

The superordinate theme of "illness" refers to the themes of asthma symptoms and the difficulties related to COVID-19 as a disease, considering both the aspects of information, finding, using personal protective equipment and the consequences that symptomatology or isolation has on people and therefore lost activities. Attitudes and behaviours result to be related to the

Table 4 Examples of Quotes of People with Asthma According to the Superordinate Themes, Themes and Sub-Themes Emerged

Superordinate Themes	Themes	Sub-Themes	Examples of Quotes
Illness	Symptoms of asthma	How is going	≪Well, I would not even know what to say to her because we have always been at home. Eh. I do not know. I am starting to go out now but always with the right caution, that is≫ (Patient AS50)
		Changes	≪Honestly. Yes, I have had some problems with asthma, I have been using sprays a bit more because maybe being confined indoors all the time could give me a moment of claustrophobia. a moment that was not 100% perfect….≫ (Patient AC47)
	Difficulties related to Covid-19	Difficulties related to the usage of DPI	≪Well, the only thing that bothers me a bit is wearing the mask because it takes the air out of me. Especially now that it's starting to get a bit warmer, keeping the mask on gives me a feeling of suffocation≫ (Patient AS70)
		Difficulties related to obtain DPI	≪Perhaps the issue at the beginning was finding the gloves, which unfortunately was quite difficult≫ (Patient AC47)
		Missed activities	≪.the only thing I miss is being able to go out, walk around, take the baby around, you know…≫ (Patient ARD57)
		Information	≪I have never placed too much trust in television news and programmes because, as with everything, in my opinion, they have distorted reality to a great extent... in short, they convey misleading, distorted messages. And this, unfortunately, has contributed to the bad behaviour of people and also to generate fear... not that fear should not be linked to all this, but I am talking about a wrong fear... of panic. So, television I have always looked at it with scepticism. I have often followed the data and news from the Protezione Civile or other certified sites and bodies by searching the web. I have always found them very reliable≫ (Patient EG84)
Experienced emotions	Lockdown period	During lockdown	≪being housebound all the time could give me claustrophobia…≫ (Patient AC47)
		After lockdown	≪I do not go out much, I go around my neighbourhood and once a week I started going shopping again. Afterwards, when I was able to go out in May, I was a bit scared of going shopping, going to church, going by car. In short, all the things I had not done for a while≫. (Patient AG48)
	Medical changes	Related to canceled visits	≪I was a bit worried, yes I was a bit worried. But, I repeat, the fact that I felt quite well, that I did not need to take the drugs they told me to take in case there was a flare-up, then I felt quite. I did not feel bad, so there was no point in worrying.≫ (Patient AMB38)
		Related to obtained visits	≪But look, honestly, just by seeing me and talking to me she told me that she saw me very well because a few months ago I had gone and, even before visiting me, she had understood that there were problems. So I am very sure about that≫. (Patient AC47)
	Emotions Covid-19 related		≪Well, definitely a lot of fear still. Even if not as much as I was at the beginning, there are now, for better or worse, a few more weapons to fight it, there's a bit more information from the medical point of view, so I would certainly be afraid as I still am, but it's no longer the fear of emptiness, the fear of the unknown. It is the fear of a virus which is very powerful, but which is at least partially known. We have a few more weapons, so.≫ (Patient CP78)

(*Continued*)

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Table 4 (Continued).

Superordinate Themes	Themes	Sub-Themes	Examples of Quotes
Beliefs	Beliefs about asthma	Self-efficacy	≪In this situation I was at home for two months and I did not get exhausted or anything, I was quite serene... serene but not for what was outside, at home I was serene, that's it, I was not bad in these two months≫. (Patient MS55)
		Worries and coping strategies	≪I was getting nervous for nothing since I cannot do anything about it. So I stopped watching all the news like I did before, like I did in the first week... now I do not really remember≫ (Patient AG48)
	Beliefs about Covid-19	Preventive measures	≪If it's in the air, we catch it even without a mask. How do you know? I have never worn gloves because I have always been against it because they said it could make the situation worse if contaminated. So I have never worn gloves but I have a mask. But, in my opinion, if it's a virus that you catch in the air and if you are on the terrace at home you catch it, in the end you do not know where it comes from.≫ (Patient MP75)
Expectations	Expectations related to Asthma	The combination of asthma and Covid-19	≪Eh. Well, it has a greater impact. Well, if it affects the lungs and bronchi, my lungs are already narrower. So it has a greater impact in the sense that. In fact, I was saying that they will not cure me even if I take it. You know the terrible news that they were telling us. Of course they have to decide whether there are enough ventilators. In fact, I was saying that I am like that and I am old enough that they will not even treat me. That's it≫ (Patient LT37)
		Progression related to ageing	≪In my opinion, the same. In my opinion but I do not know if it's scientifically correct but I see it catching young people also, anyone. Catching it can happen to anyone≫ (Patient MQ53)
		Progression in case of Covid-19	≪For me? Certainly the chances of contracting it are very high. Yes, high…≫ (Patient IG72)
	Expectations related to Covid-19	To contract Covid-19	≪Obviously I got the impression that the temperature has something to do with it anyway, it must be something that works a bit like the flu virus. So it's very low right now, what's going to happen in October I have not the faintest idea... if you look inside a glass ball, you are more likely to get it right. I have no idea, they have no idea, let alone me.≫ (Patient MM70)
		To use DPI in the future	≪So, I think I will continue, but we will all be more careful, like always washing our hands, if we are near someone you do not know, keep a little distance. Maybe the mask. If everyone does not wear it, there's no point in me wearing it. But I dare say that even the mask, in certain environments like this, will remain there. It will certainly stay with me≫ (Patient MV63)

Behaviours	To protect	Protecting myself	≪I can assure you that I am following all the directives, even those on bikes that say you should not use the mask... but I use it anyway, so. Then I do not know what could happen, honestly, I do everything I can to make sure it does not happen, but then again.≫ (Patient MS55)
		Protecting the others	≪At the beginning it was a little bit distressing, a little bit worrying for everything and for the whole family, for the situation we were in.But we locked ourselves in the house≫ (Patient OF50)
	Risk taken		≪You try to do it, but sometimes it's not possible. For example, I took the plane and the plane was full, all the seats were occupied. There was no social distancing whatsoever. We were all wearing masks but there was zero social distancing. They opened the doors and everybody piled on top of each other in the aisle... that's a moment when the chances of contagion go through the roof, it's useless to tell each other≫ (Patient OC79)
	Adherence	Adherence to therapy during lockdown	≪I continue with the treatments that have been prescribed. I know it's something I will carry with me since I was born, it's a habit in the end≫ (Patient AS70)
		Adherence to prescription related to Covid-19	≪I am about as by-The-book as you can get. And wash your hands, and do that, you know... everything... Even now that I am talking to you, I have it because I am on the road≫ (Patient MS55)
	Contacts with GPs	Contact for information	≪No, it was enough for me to get the information I was looking for on the Internet and from acquaintances who were more informed and knowledgeable about the subject than I was≫ (Patient EG84)
		Contact for Covid-19 issues	≪The doctor in charge does not want you there, they tell you to contact them only when there is a need... The medicines and these things here. You cannot waste their time because they have their own commitments. If there's no good reason, I will not make phone calls≫ (Patient AS50)
		Contact for Asthma issues/ visits	≪I made a phone call on the subject to the doctor... to my attending physician. Yes, when the situation first came out I wanted to ask anyway. I also sent an e-mail to the pneumologist at XX, who unfortunately, poor thing, contracted the virus and was therefore at home for a long period... I asked her for advice and also my doctor.≫ (Patient SI 79)
	Support	Receiving support	≪Well, my daughter helped me a lot because I have a disabled husband in a wheelchair, just to be lifted. So my daughter, when she stopped working at the end of March, she moved in with us because no more women came to our house. Nobody comes in anymore. So she moved in, although for the first fortnight she was quite far away, like in quarantine, just in case. But we had this big physical and psychological hand.≫ (Patient AG48)
		Giving support	≪In the afternoon my daughter would come because we live opposite... my daughter would come in the afternoon, I would make food for her and give her something good≫ (Patient LT37)

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Table 5 Distribution of Themes and Sub-Themes in Relation to the Type of Asthma

Superordinate Themes	Themes	Sub-Themes	Extrinsic Asthma (N, %)	Extrinsic Asthma (References)	Intrinsic Asthma (N, %)	Intrinsic Asthma (References)
Illness	Symptoms of asthma	How is going	15 (48.4)	19	3 (9.7)	3
		Changes	13 (41.9)	16	4 (12.9)	6
	Difficulties related to Covid-19	Difficulties related to the usage of DPI	16 (51.6)	24	6 (19.3)	11
		Difficulties related to obtain DPI	11 (35.5)	15	2 (6.4)	2
		Missed activities	0	0	1 (3.2)	2
		Information	21 (67.7)	41	7 (22.6)	13
Experienced emotions	Lockdown period	During lockdown	16 (12.9)	34	5 (6.12)	13
		After lockdown	9 (29)	16	3 (9.7)	4
	Medical changes	Related to canceled visits	20 (64.5)	39	6 (19.3)	10
		Related to obtained visits	7 (22.6)	11	0	0
	Emotions Covid-19 related		22 (70.8)	38	5 (6.12)	12
Beliefs	Beliefs about asthma	Self-efficacy	12 (38.7)	8	5 (6.12)	5
		Worries and coping strategies	16 (51.6)	32	4 (12.9)	9
	Beliefs about Covid-19	Preventive measures	18 (58)	28	7 (22.6)	8
		Acceptance	2 (6.4)	2	0	0
		Related to contract Covid-19	20 (64.5)	29	7 (22.6)	8
Expectations	Expectations related to Asthma	The combination of asthma and Covid-19	22 (70.8)	52	7 (22.6)	13
		Progression related to ageing	15 (48.4)	15	7 (22.6)	11
		Progression in case of Covid-19	21 (67.7)	34	6 (19.3)	9
	Expectations related to Covid-19	To contract Covid-19	21 (67.7)	34	6 (19.3)	9
		To use DPI in the future	18 (58)	24	7 (22.6)	11

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Behaviours	To protect	Protecting myself	16 (51.6)	36	4 (12.9)	7
		Protecting the others	8 (25.8)	26	2 (6.4)	4
	Risk taken		0	0	0	0
	Adherence	Adherence to therapy during lockdown	17 (54.3)	25	5 (6.1)	7
		Adherence to prescription related to Covid-19	14 (45.2)	15	4 (12.9)	5
	Contacts with GPs	Contact for information	16 (51.6)	42	6 (19.3)	12
		Contact for Covid-19 issues	22 (70.8)	30	4 (12.9)	4
		Contact for Asthma issues/visits	7 (22.6)	6	2 (6.4)	2
	Support	Receiving support	4 (12.9)	7	1 (3.2)	3
		Giving support	3 (9.7)	3	1 (3.2)	1

Notes: The number of participants who referred to the theme and the number of references to each theme for each type of asthma are considered, in separate columns.

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knowledge and awareness of their symptoms. On the other hand, knowledge, beliefs, and expectations are largely dependent on the sources of information, which are mostly represented by television and the internet. Despite the mass media playing a relevant role in spreading awareness about COVID-19, most participants refer to a high level of confusion, reacting by no longer listening to the information sources themselves to no longer experience the feeling of disorientation, anxiety, or anger.

Experienced Emotions

Overall, the most experienced emotions are fear (31 persons; 100%; 107 references; 5.9% coverage), worry (5 persons; 16.12%; 9 references; 1.52% coverage) and anxiety (6 persons; 19.35%; 8 references; 0.45% coverage). Figure 2 illustrates the co-occurrences of the presence of fear. A major part of the referrals to fear is related to COVID-19 (46 references; 4.33% coverage). Fear is to be understood in all its facets, from being able to contract the virus, and infecting other people, to not being able to find the resources to get proper treatment because of cancelled or delayed medical visits. During the lockdown period, 13 references (0.99% coverage) are referred to as fear, while 6 references (0.36% coverage) are referred to as fear in the period after lockdown. Only 4 references are about fears related to the cancelled visits. Only one person refers to the lockdown period as "anxiety" (1 reference; 0.04% coverage) and another one uses this emotion to refer to the cancelled visits (1 reference; 0.03% coverage). Three references (0.24% coverage) are devoted to COVID-19 anxiety as a pathology.

Four references (0.64% coverage) are about worries related to COVID-19 and three references (0.60% coverage) are about worries during the period of the lockdown.

Beliefs

The superordinate theme of beliefs focuses on self-efficacy on the one hand and concerns about one's condition, asthma, on the other. Those who, despite having asthma, live in contact with the elderly or children express more concern for each other than for themselves, believing them to be at greater risk of contracting the virus or being physically worse off. The participants also refer to how functional and effective they think the preventive measures (PPE) taken against COVID-19 would be, how likely it is that the virus would be extinguished and/or how soon it would be eradicated. Figures 3 and 4 show the beliefs associated with mask and glove use, respectively.

Expectations

Expectations expressed are about the likelihood of developing COVID-19 and its progression with asthma and/or age as well as associated with the probability of continuing to use PPE in the future. The prevailing expectation is that people with a chronic condition in general or older are more likely to be at risk for contracting the virus (29 persons; 93.54%; 68 references; 5.61% coverage). The risk of exposure to the virus, together with the fear of not being able to find necessities for the treatment of one's condition, are the most often cited factors about their expectation of having to protect themselves for longer or having to limit their use of certain environments. This would increase the likelihood of using PPE in the long term (14 persons; 45.16%; 21 references; 1.45% coverage), especially the mask (15 persons; 48.38%; 18 references; 1.25% coverage). In addition, the chances of being visited are expected to be lower in the event of future lockdowns, with the idea that you will be more alone.

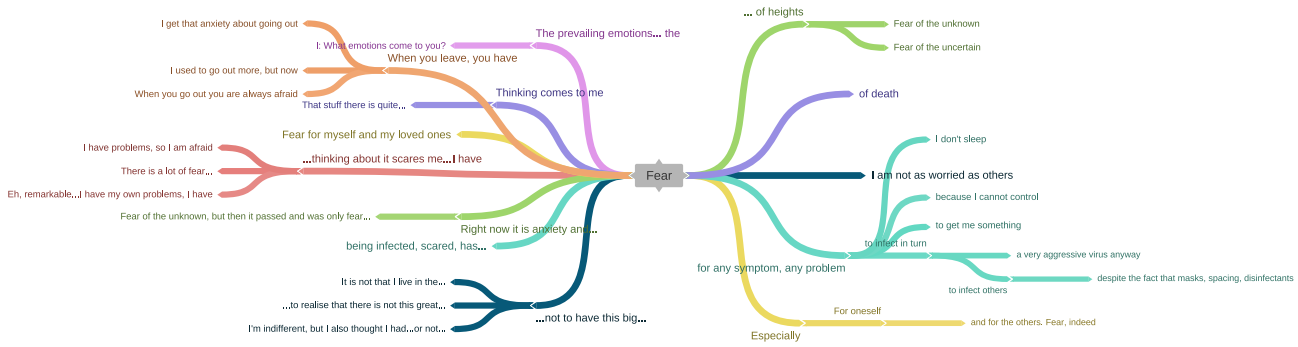

Figure 2 Co-occurrences about the presence of fear.

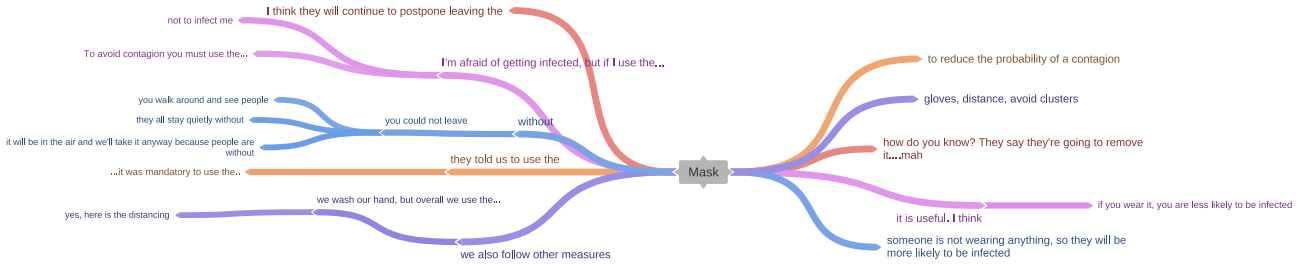

Figure 3 Co-occurrences about beliefs associated with mask.

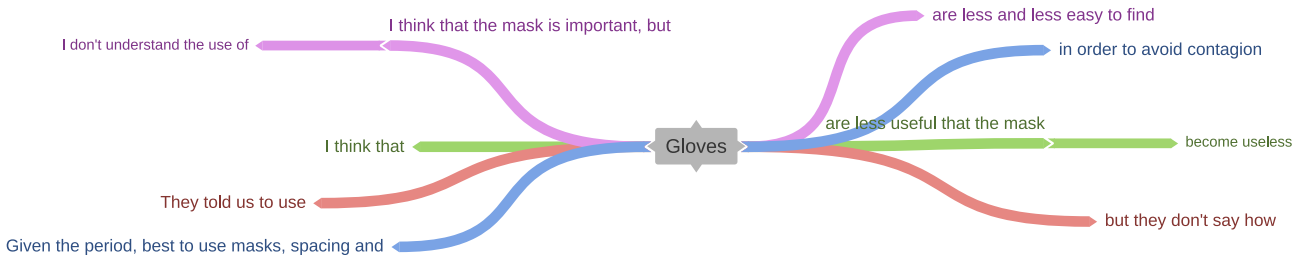

Figure 4 Co-occurrences about beliefs associated with gloves.

Behaviours

"Behaviours" refers both to the behaviour of protecting oneself or putting oneself at risk from the virus and to adherence to medical prescriptions for asthma as well as requests for help from the general practitioner or other family members and associations. Significantly, the most used words to describe the behaviour of protecting oneself is "mask" (31 persons; 100%; 33 references; 0.65% coverage), followed by "visits" (25 persons; 80.64%; 25 references; 0.49% coverage), while the most used word to describe the risk taken is "social distance" (2 persons; 6.45%; 2 references; 1.52% coverage), which is commonly defined as "difficult to maintain". People who describe themselves as more "exposed" (1 person, 3.2%), "fragile" (4 participants, 12.9%) or "vulnerable" (1 person, 3.2%) are those who think they will use the suggested PPE for longer, out of fear of contracting the virus and out of mistrust of the measures suggested by the government. Indeed, important to note is that as many as 21 individuals (67.74%; 41 references; 82.23% coverage) implemented positive coping strategies, such as putting old things in order in the house, taking up new hobbies, exercising, sleeping better, or eating more regularly and balanced meals.

Discussion

The current study aimed to provide an insight into people with mild to severe persistent asthma's experience during the first wave of pandemic emergency, identifying patterns of emotions, beliefs, expectations, and behaviours. Findings portray a complexity of experience, underpinned by uncertainty and vulnerability across the trajectory of the pandemic, reflecting much of the current literature.[20] There are only a few studies that focused their attention on these pervasive variables, also considering the perceived vulnerability to COVID-19, especially in people affected by the chronic respiratory condition,[20] while most of the literature has identified high levels of anxiety and stress-related to the COVID-19 pandemic in general[21] and in people with pre-existing chronic conditions in particular.[22–24] Concerns and anxieties about one's own possibility of being more exposed to the virus and/or infecting loved ones are increased by a sense of uncertainty in people's accounts of how the pandemic is being handled by institutions and by civic sense. On the other hand, health care such as routine check-ups of patients with chronic diseases, including those with asthma, was adversely affected, especially when, due to resource constraints, countries were forced to redirect attention to the COVID-19 pandemic, disrupting the continuum of routine care.[25] Patients with asthma, misconceptions, or beliefs about the risk of infection with a highly contagious virus such as COVID-19 can lead to poor decisions such as avoiding

hospital visits when necessary, discounting medication or, conversely, feeling that they need more tests or stockpiling medication due to increased fear, anxiety, and worry.[9] In addressing these dynamic challenges, specific measures are needed to address the essentials of a particular population. In establishing these measures, it is also important to consider whether there are knowledge gaps, such as attitudes about COVID-19 and various behavioural practices. Finally, in line with previous articles, the majority of participants obtain information about COVID-19 and its spread from mass media,[26,27] even if they often describe this experience as confusing, resulting in an increment of anxiety or anger. In particular, the unprecedented nature of the COVID-19 pandemic, which has led to rapidly evolving information, frequent guideline updates and an overwhelming volume of data, may have contributed to this sense of bewilderment and confusion for both patients and healthcare providers.[28] In this regard, it is also worth mentioning that information was disseminated through various channels, including official health websites, news reports, social media, and peer-reviewed journals. These sources have often presented conflicting or changing indications, contributing to uncertainty. This lack of clarity could result in poor decision-making, delays in treatment, or patient adherence problems.[28,29]

Strengths and Limitations

To the best of our knowledge, this study is the first that explored the interaction between asthma, emotions, and expectations during the time of COVID-19. Recruitment benefited from a random, well-defined selection and a sample of people with specific clinical characteristics, generally seen within the same clinic. Thus, the generalisability and representativeness of the data are limited due in part to the small sample size, as is the case in most qualitative studies, and in part to the narrowness of a single clinic included in the study. We wish to underscore the importance of conducting a quantitative study with a significantly larger sample size to facilitate a more comprehensive analysis of allergies, comorbidities, and their relationship with expectations and emotional experiences. On the other hand, the value of a qualitative approach such as the one promoted by the IPA favours a more in-depth, analytical analysis, as well as a homogeneous sample, allowing the researcher to better assess the applicability of the results in clinical practice as well as in future studies, to broaden the understanding of the emotional and cognitive processes and thus linked to the beliefs and expectations of the participants. Due to the limitations of the pandemic, it was not possible to conduct the interviews in person, which contributed to limiting the researcher's attention to non-verbal elements and may have reduced the participant's comfort level. In addition, due to the restrictions of the pandemic period, the most recent spirometry readings made available by the participants themselves had to be used, thus relying on previously confirmed diagnoses. Finally, limitations include the fact that all study participants did not have COVID-19 and only a low percentage of them (6.45%) had cases in their families as well as an imbalance in favour of the female gender (71%) that may have limited the saturation of the subjects reached.

Clinical Implications

The arisen perspectives, especially those about emotions, beliefs, and expectations about disease management during the first wave, suggest that daily workflow processes should be restructured to ensure contact with multidisciplinary healthcare teams. The state of confusion generated by scarce and poorly managed information can help us to outline better communication strategies, more accessible and user-friendly sources of information, and tailored educational programs. Information and psychological support interventions, tailored to the specific chronic condition, should also be promoted at a distance, by reducing misconceptions and favouring better ownership of care even in times of health emergency. The pandemic demonstrated the benefits of digital transformation and the value of remote technologies, such as wireless monitoring in ensuring real-time communication of health information between patients and their physicians.[30,31]

Future Research

Future studies could take the form of observational or cross-sectional studies, which would also detect the presence of the pandemic and determine the level of knowledge and attitudes towards it to assess the extent of its impact on the health care of patients with a chronic respiratory disease and their daily life.

Conclusions

This study showed different psychosocial aspects of living with a chronic respiratory condition during a pandemic period, demonstrating the complex interplay between emotions, beliefs, expectations, and behaviour that changed just in a limited period as the first wave. The healthcare systems of all countries should consider constantly training their staff so that they can promptly offer remote support at multiple levels (health, psychological, social) and that the patient is aware of it.

Key Messages

The impact of COVID-19 on people with asthma appears complex, being moderated by multiple illness-specific, demographic, and environmental interacting factors. Given that other coronaviruses cause asthma exacerbations, concerns have been raised about the impact of COVID-19 in people with asthma. However, little was known about the specific experiences, emotions, beliefs, and expectations of individuals with mild-to-moderate persistent asthma during the COVID-19 pandemic. This study adds new insights into the emotional and cognitive impact of COVID-19 on people with asthma, including the challenges they faced in managing their asthma and the emotional burden of living with a chronic respiratory condition during a pandemic. The study also highlights the importance of continuity of care and self-efficacy in managing chronic illnesses during times of uncertainty.

The findings of this study may inform future research on the psychological and emotional impact of COVID-19 on individuals with chronic illnesses, particularly those with respiratory conditions. The study also has practical implications for healthcare providers, highlighting the importance of providing ongoing support and education to patients with asthma to help them manage their condition during the pandemic. The study may also inform policy decisions related to healthcare provision and support for individuals with chronic illnesses during times of crisis. Overall, the study underscores the importance of taking a patient-centered approach to health care, particularly for individuals with chronic illnesses, during times of uncertainty and crisis.

Abbreviations

COVID-19 or SARS-Cov-2, Coronavirus disease 19; QoL, Quality of Life; HRQoL, Health-Related Quality of Life; IPA, Interpretative Phenomenological Analysis; COREQ Consolidated Criteria for Reporting Qualitative Research; GINA, Global Initiative for Asthma.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author, [EV], upon reasonable request.

Ethics Approval

The project was conducted following the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of the Università Cattolica del Sacro Cuore (cod. 35-18, 21/12/2018), in Milan (Italy).

Consent to Participate

The principal investigator verbally explained the contents of the information sheet and informed consent form to the potential participant and answered questions before undertaking the interview according to Italian Law 196/2003 on Privacy and Safeguarding of Sensitive Data and the GDPR of the European Union 2016/679. In addition, at the beginning of the interview, participants were reminded in the audio recording that they would be contributing data to the study and would be used for research publications and conference presentations and that pseudonyms would replace their original names in these publications.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

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