

AMMA Research Guide

Background: **AMMA** or **Asthma Monitoring and Management App** is a new wearable health tracking and monitoring device for asthma sufferers. **Google.org** has created this revolutionary technology that measures a wearer's breathing patterns, blood pressure, steps, sleep patterns, and other vital statistics to help sufferers from frequent physician visits and emergency care visits, as well as maintain a healthier lifestyle overall. **AMMA's** companion **mobile app**, works in conjunction with wearable technology to help parents and caregivers track whether the asthma patient has an **inhaler**, **see past attacks** and review their **medical history**, and also provides adaptive statistics that help the user better anticipate and manage symptoms or an attack.

With the following in-person sets of **interview questions**, we aim to better understand which problems potential **AMMA** users might face, including triggers, weather hazards, and what they think will **improve** their current health. The interviews are not only given to sufferers themselves, but also to three doctors that often see and treat patients with asthma. Doctors and caregivers contribute different perspective and ideally, reinforce, and enlighten information users have provided.

Interview research **goals & objectives** include:

- Empathize and engage with users to identify user **gain & pain points**

- Discover which **features/functions** are most important users

- Find **parallels** among user experiences to create a feature hierarchy

- Confirm and validate** previous research e.g. competitive analysis, personas literary review, historical analysis and general beliefs/assumptions about users + app

- Help users **fulfill their needs**

AMMA Interview Research Findings

Summary:

Asthma sufferers find it **very challenging** to **identify triggers**.

They hope to improve their situation, but often **don't know** what can.

Asthma is usually exacerbated by **changes in the weather**, more so **seasonal** changes

Allergies and smoking also make it worse.

Attacks tend to have the same/similar symptoms, but **largely unknown** and **seemingly arbitrary causes**.

Sufferers **do not notate** any of their symptoms or conditions during/before the — **or any data at all**.

Sufferers generally **don't measure** their **peak flow**, or don't know what it is

Sufferers **neglect and/or forget** to take their medication because they don't like or feel they don't need them.

Sufferers sometimes don't take medication because **they can overdo** it easily and that's also bad

Sufferers still think medication is **essential for their survival**

Sufferers **request tips** and care outside of medication and find most of their information on asthma care and treatment from their **doctor/healthcare provider, blogs and articles** online, and the occasional pamphlet.

Based on the findings above, here are a few deductions

- **Weather notifications** are essential, if not helpful, for most users
- Having users **notate symptoms** and attacks, **track their asthmatic behavior**, can be built into the app
- **Reminders** and **medication regulators** can help gauge medication overuse or underuse
- **Treatment** and **lifestyle tips** outside of medication can and have prove beneficial
- A seamless yet expansive **onboarding process** is needed to build **customized action plans**
- Users, even with severe asthma don't visit the doctor more than 1x in 6months - year, unless the situation is dire, in which case, they are told to go to the ER.
- **Peak flow measurement** is uncommon (in this data set), but is beneficial and complicated for those who have tried to use it
- Most people find

Interviewee	How long do you think you have you suffered from asthma?
1	5 years
2	Since I was 5 years old
3	Almost 15 years, but I used to have headaches as I kid when I went outside, so maybe before?
4	Grade 8 - had an asthma app, I couldn't breathe at all - had a huge asthma attack, not sure what caused it, 16 years ago. Then I went to doctor's house and was given steroids, inhaler etc... this was in a Nepal, of course, so I was lucky that my mom is a physician and I got to one really quickly
5	As I child I had it - but there were no inhalers back. Then it disappeared and at 60 yrs I was diagnosed with adult asthma. As a kid, I was always sickly, took kid allergy meds before, barely could exercise, my chest hurt often, and I used vicks or vaporizers. My mother took me to the country, maybe the sea air would help but it didn't. Going to the Catskills helped me and when I left the city and went camping, nothing happened — I was fine
6	32 years
Q2	When were you first diagnosed? How has been diagnosis changed your life?
1	3 years ago. Become more careful about going out. What I'm eating - sometimes triggered by food and clothing. Usually wear a mask. Don't go out when its too windy - when pollen is too high. Not an asthma that is there the whole year - mostly spring mostly fall — never summer, winter
2	5 years old, keeps me from doing certain exercises, going out in the spring, allergies also make it worse
3	Around 13-14 years; it took a little bit to diagnose me because my doctor thought it was asthma
4	The first attack was when I was diagnosed - I was 14 years, my brother had asthma, so we knew
5	I was four or five when I was first diagnosed. The diagnosis didn't change anything.

6	same time - it did two things - I use to get so many attacks where I wouldn't have any control, breathing level decrease - it would happen anytime, anywhere - major attack happened I might overmedicate myself, exacerbate. Happened for 12 years. Breathe about 25% less because atrophied lungs, so can't breathe enough
Q3	Can you walk me through your day yesterday with asthma?
1	First, I wake up in the morning — I'm worse in the morning and at night — I usually experience sneezing and cough, take medication - Ventolin when its the worst - two puffs/ 2x morning/evening. I also make sure to check the weather for pollen count and don't leave the house without a mask, only if I've taken Allegra D - 24 hr. I use Nettle pot with - Neti 2x/day.
2	Rest a lot, keep on taking medication - morning, if I get the feeling, I go to the doctor - I take a dose of the nebulizer, in the afternoon if its worse then I take a puff and if not - I take the nebulizer The feeling - feel shortness of breath, throat closing in, and discomfort around your head and throat - headache-ish, eyes tears upUsually notice the day/moment of —
3	Usually its in control, so don't use inhaler everyday, but every other day. If the weather is weird I take it a little more often and make sure to keep it in my bag
4	I live Colorado, there are a lot of forest fires, there is a lot of smoke in the air. Took my inhaler 3x yesterday/ the max you can take is 4. I must stay inside without it - allergy symptoms, inside I had the windows open
5	Usually its the cold air, changes in season. For instance, young or old, got sick around Feb/March, Why — I don't know? I was told it was the cold air, breathe it in and it hurts worse. Day before yesterday didn't use an air conditioner and that helped since its worse at night and when you wake up morning for me. Then yesterday I left it on and I needed my inhaler a few times yesterday.
6	I wake up and take a combination of steroids and long acting inhaler - Advair every 12 hours I can't do any major exercise - sometimes I forget, start feeling something
Q4	Was it always this way? Has it changed? When does it change?

1	Not always this way. Allergies were 5 years, 3 years asthma - confused the two doctor suggested asthma. Not a child sufferer
2	Usually I get wheezing or an attack, but once it was really bad a little bit after the time I turned 5
3	Yes, but transition between seasons have been worst
4	Usually really bad during seasonal change, transitions, and when I exercise - sometimes I take my inhaler. The smoke in the air is effecting. When I smoke it's really bad, got worse when I was older.
5	No just some years ago
6	First five years were really bad then I went to yoga and gargled to take out "black mucus" and it was better, after sometime 5 -6 more years my medications became stabilized and effective
Q5	How often did you have to use your inhaler last week? or device to help you?
1	Not at all because its the summer time, but in the Spring - 2-3x, Fall - maybe 1x
2	Don't really use it right now, but in the spring 2x/day, helps me lot -
3	Every other day - if its hot, humid, I really feel a difference - I have to check the weather on the TV
4	Normally I take it 3 to 4 times a week. I need to take it to focus. My breathing changes.
5	Very rarely, used it a year ago unless you have a flair up.
6	I use Emergen - C, long Broncho-dialater and Ventolin maybe 1x/3 months
Q6	How do you generally notate your symptoms? If you don't or do seldomly, what do you find prevents you from managing them?
1	No writing. Usually not bad enough to keep a record - no track record
2	Don't write them down, tell my mom - all symptoms don't happen all at once, they happen all over, symptoms are always different. Sometimes my eyes are itchy, have headaches, throat is dry - always shortness of breath.
3	Throat blocked, itchy stuffy nose and coughing, strong perfumes/smells also triggered

4	I don't, I usually I know when its going to happen - its not the random I feel, I know how to avoid triggers. I'm not a huge app user - I think they'll probably be patterns that I don't notice because - it might something more
5	No, but when I was in the hospital they gave me a monitor - plastic thing in a case, check it with a special device. I use that to tell sometimes if its bad. I don't know why I don't write them down
6	No. I don't find it necessary
Q7	Can you tell us about your most recent asthma attack? (Were you able to tell your symptoms were worsening much before the attack?)
1	Persistent week cough, end of April, early May really bad. I can tell when its going to get bad because of allergies - the allergy meds stop working and they get worse
2	I came from school and basketball. I keep running around. It was at night. I took three doses - only option was go to the ER. Triggered by running and exercise and being tired. It came slowly throughout the day. Felt it getting worse, but didn't think it'd be an asthma attack. I didn't think it'd get that bad
3	9-10 years ago. I couldn't breathe and I think my attack
4	It was yesterday. I was going to sleep - when I lie down it affects me more. Maybe its the post-nasal drip. I had to my inhaler. — Actually the most recent one was when I was visiting my husband's family in Kansas - his relatives smoke, so I was triggered pretty badly - visiting his friends house with cats too - after an hour my throat was itching, needed. They were worsening but I couldn't really tell because it went full blown really fast. If I went outside it went bad. Even my inhaler once didn't work
5	I've been having headache & congestion, and think I had a attack four days ago. I took Flonase & Mucenex, but it didn't help that much. I had a rally bad one bad 4-5 years ago. I had a bad cold and I was wheezing. They had to give steroids throughout my the system & the nebulizer at the hospital. They kept me at the hospital for 6 - 7 days. This has happened multiple times. It's fine, then out of nowhere I have a flair up.

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Q8	What triggered your asthma attack?
1	Having a cold?, I can't remember what did
2	I came from school and basketball. I keep running around. It was at night. I took three doses - only option was go to the ER. Triggered by running and exercise and being tired? I guess... I'm not really sure
3	I think perfume
4	I think stale cigarettes + cat allergies
5	Pain in back, slight headache, wheezing. Prednisone - steroids. 30mg Friday - Monday
6	Short of breath while climbing stairs - 2 or 3 years I wasn't able to tell and then a smaller one when I took Ventolin when I was short of breath in Brazil
Q9	How often do you visit a doctor about your asthma? How often do you talk to him/her about it?
1	2x during high season — that's it
2	1x or 2x/year, not outside those times, no talking/emailing either
3	1x/year but I work at a doctor's office, so I talk to him all the time, ask him
4	Don't really see my doctors that much, my mom usually helps me (she's a physician). I saw my doctor to get my inhaler - 3 months ago after a seasonal change. I talk to my mom pretty often about it - to my especially - every weeks about it - stress levels and anxiety increase it.
5	1x 6 months, I sent the doctor/his office emails, because now we use e-prescriptions in NYS to get more medication and change the dose
6	No idea, wheezing & coughing, uncontrollable body functions
Q10	How helpful are your visits to your doctor? Why?

1	Yes. Sometimes the medication is not working - that's why I go to the doctor - give me alternate or stronger meds - changes dosage
2	Pretty helpful, teach me different ways of how to breathe that can prevent the attack, slow it down. When I was little inhaling the puff correctly
3	Really helpful - he helps me with my doses, gives me new ways to manage my illness
4	Not too helpful - I don't ever want to go on steroids again. Even when I have an attack - mediating helps a lot, sometimes its so triggered, I can help it myself. Don't really on my doctors
5	It's helpful, but you have to make sure you're seen soon when its bad
6	I see my doctor every 6 months, 1x/3 months, over the phone prescription
Q11	How important is medication to managing your illness? Why do you find that to be so?
1	Medication is 8/10 for my illness - if I don't take meds, then I can't work. I feel sick. I can't do chores. The illness consumes you
2	Scale of 1 - 10 — 7/10, when it gets really bad, when it's not that bad you can "dodge", inhaler is not that good for your health, you should try and prevent from taking them - once you start taking the inhaler, you can't stop otherwise you get backlash
3	Really really important, without it I can't survive - It depends on the type of doctor you have - your doctor must be the right person, doctor's must regiment your health
4	Inhaler - first thing I check for when I go anywhere. I can't breathe without it
5	Very important. Can't do without it.
6	100%. I'll stop breathing in two days
Q12	What type of medication do you take?
1	Ventolin 2x/day, Allegra D 24hrs, sometimes Advair
2	I take ventilin, nebulizer, nothing for headaches or itchy throat...

3	Advair - 250mg, Flovaint nasal spray - after 2-3 days, 1 spray – need to take the first one + Singular 10mg, but my doctor's says to take the Flovaint every day and I self-medicate someimes and he says not to play games with my medication
4	Singing Nettles Tea, Claritin sometimes, my inhaler
5	Advair & Singular - keeps, Advair 250/50 round purple morning and night and Singular at night 10mg, proaiphfa counter 90mg. Prilazic, Nexium, acid reflux makes your acid reflux
6	Emergen-C, Bronco-Dilator every day, 2x/day because they last 12hrs each. I take Ventolin 1x/3months and oral steroids, maybe once in two years, but no allergy meds or anything
Q13	How much time do you spend taking care of your asthma a week?
1	During high season - an hour day - intermittent
2	I take care of it "once it happens" pouf 1x/day, during high season, 20 - 25 minutes of day
3	It's routine for me now. Very little.
4	30 minutes or so. 45-minutes. week.
5	No time - unless I have an attack
6	10-15 minutes
Q14	How do you stay informed about developments in asthma treatment and care?
1	On the news - pollen count - no other trigger identified, maybe dust mites. Also doctor's office fliers
2	Doctor, sometimes the school nurse – definitely the school nurse
3	Pamphlets - my doctor tells me
4	Usually don't. - If I did, I look at blogs, herbal medicine blogs
5	Go to the doctor's, he calls the pulmonologist, read articles - usually online
6	I keep reading, internet based - medical research & my doctor

Q15	What do you feel might help improve your current asthma condition?
1	Not medication? precaution – more information about how to care of it – tips & data
2	I don't know - maybe yoga?
3	Take medication regularly
4	Eating better, avoiding dairy, food allergies, keeping track to see exactly what triggers it individual, customized health plan & tracking, medication
5	Taking steroids, they don't know what triggers it. I stopped exercising maybe? exercised 1hr 20 minutes/wk because I broke my toe – then the attack happened
6	I have no idea, not the best survival, I'm not a normal person - no idea about triggers so that - my asthma adult asthma intrinsic asthma, no tests are conclusive, smallest change can hurt me
Q16	What else would you like to share about your asthma?
1	Irritable around your family, not active, can't concentrate, can't drive
2	During/before after an attack I feel suffocated, short space - I don't want anything near me. After taking the nebulizer my hands shake/tremble.
3	No one in my family has asthma. I had 2-3 miscarriages and after that I think I started having asthma, maybe that's what started it?
4	Sometimes what frustrates me is other people don't understand what I go through and don't realize that I'm having a hard time. People don't realize how bad it is or take it seriously enough
5	Acid reflux affects it, tried apple cider vinegar for it didn't work, I have to relax more, yoga helps tons
6	Asthma is not one disease, four things happen - lungs contract spontaneously, body produces phlegm, lungs swell, capillaries contract (where carbon dioxide and oxygen change). Your body assumes that you are taking in something that's bad for you, you have spastic contractions and more It's different for every person and so complex which makes it so hard to treat.