Project work, part 2

Research questions and user requirements

Problem: Tracking kids allergies with already existing solutions

Allergies can be tested with skin tests and from blood but unfortunately especially child's allergies are not usually found on allergy tests and if test shows no reaction it does not guarantee that child is not allergic to the item. So the only way to find them out is to avoid certain foods and ingredients and then test what symptoms each of them end up causing. Many people end up keeping food diaries, some on paper and some on computer (e.g. in Excel) and some in existing applications. There might be additional factors too, like pollen season or animals, causing symptoms and the symptoms might range from rash to gastrointestinal tract and have long delays sometimes before appearing. As a whole there are many factors affecting solving causes of allergies and forgetting some things might mess up the whole investigation and cause misunderstanding the patterns of allergies.

With current allergy applications you can find those which recommend suitable restaurants and suggest different kind of recipes based on ingredients what you can or cannot eat. There are also applications providing pollen and weather forecasts and notifications of pollen levels based on location.

Then there are allergy listing apps to keep track of your eating and symptoms. One app, allergy journal allows recording of symptoms and foods and also level of symptoms. It has search option and ability to run reports and analyze data. In the app you need to select food or symptom and hours before having it when adding food to document. Then you name it and select mild, medium or severe. In same window you can choose having reports on all history or some days. You can see list of days and foods and symptoms mixed up in a list.

Other app is web application where you can set date and add photo and on baby picture draw locations of skin condition of 5 different options (dry, flat, rough, scratching mark, scaling skin) and then on activity sheet you can input date and time and select some boxes of treatment (skin treatment) or activity (night awake or no bath). They are all mixed up and choices are quite limited and point being bit unclear. Then you have daily review sheet having environmental control where you can input date and select boxes of changing sheets or air purifier. On the same page there is possible triggers box, where you have selection boxes of fever or vaccine or one box named indoor allergen. On journal sheet you have table of days and each have that listed item (e.g. skin treatment, symptom or activities) and you can press view button to see some details. On calendar view it makes bit more sense and it is bit more clear. There is some report possibilities with e.g. outdoor temperature and mainly seems that application focuses on skin symptoms and treatment.

You can find also many other different kind of applications. Most have the problem they focus on only some things (like only skin symptoms) not having wide range of options. Most have also so much going on that it would be quite a work to use it. Some have more clear selection menus, but lack having clear view of listed things and nothing is or can be separated and they are one big list. Customization to your needs is missing in all of them and you have to list continuously all the data and write product names over and over. Being already a lot of work to list all the ingredients and symptoms in addition to other elements current applications seem not to provide that much ease in documentation as one might hope.

Initial idea

Initial idea is a phone application where it would be as easy to list symptoms and eaten food and other elements needed. There could be also some automate tracking what would suggest or have some data what could affect symptoms. When application would be on your phone, it would almost all the time be with you and if addition of symptoms and food would be easy, it would be always recorded and not forgotten. There should be clear listings or views where you could see foods, symptoms and other effecting factors and make some observations. Then also with the help of the application suggestions and own investigations, you would track child's allergies more easily.

Research questions

Research questions that would help to find user requirements were selected based on current knowledge and added information gotten from the interview in part 1. In order to help people finding out the child allergies we must know what factors are burden in documentation and observations and what tasks have to be done repetitively and remember to do. Also knowing why tracking has failed would be important information developing e.g. application to track allergies so relevant information would not gone missing. Knowing how people currently analyze data when that are collecting it and what is the time range of symptoms would be relevant if some prediction or suggestions would like to be made automatically. Based on these research questions elected to be:

1. How different situations and features of child's allergies affect when making documentation?

2. Why tracking the allergies are sometimes failing or taking long period of time?

3. When someone is making observations of what might cause allergies to their child, what factors and details are relevant investigating the cause?

4. At what time range people are investigating some food ingredient to cause allergies or symptoms?

5. What are the main factors that need to be listed often or continuously and what has to be done repetitively?

There are quite many research questions and area remained quite wide but in the matter of allergy tracking there are many factors to be considered and it is relevant not to leave those factors out as it may have huge affect on making observations and to come into conclusions when tracking allergies.

Methods

First method was online survey with open ended questions. There were 12 open ended questions which were same for each participant and allowing free-form responses. Amount of questions was tried to keep limited so that participants would have time and energy to answer them. Participants were found on closed support group for parents with allergic child/children in Facebook (Allergialapset ry). This private support group has about 9000 members. First I sent questionnaire, would there be people who have had the need to trying track their child's allergies and who would be willing to answer questions sent with Google forms. Participants were promised that answers are anonymous and no contact information is needed. There were 30 people

announcing to be willing to answer in that and the next day and in the end 22 participants had time to answer before the deadline. Some of the participants sent direct message after answering the form announcing their willingness to provide more information if needed.

This method was chosen for many reasons. Having widened understanding after the interview also came clear, that situations might be really different. That is why I needed to have quite many answers from many different people with allergic child. Simple questionnaire would have been too narrow and not having open ended questions might have left out some information. Getting video interview from many people (over 20) would have been in this case too time consuming and I would have not gotten participants easily for not being able to answer totally anonymously. Even if sent online question form with open questions did not provide possibility to ask follow-up questions, it was the best choice because it offered many different point of views and participants could answer to open questions in their own words. Also this way answers remain anonymous and participants were more willing to participate.

Another method was diary and log books. One participant who offered to provide more information sent logs, table examples and diaries of all the documentations that she had made concerning tracking her child's allergies. She also answered some additional questions. It provided more detailed information on how this participant had been recording symptoms, medications, exposures to allergens and sleeping. Also more specific information were provided on certain ways of doing documentation. Larger interview also made in part 1 was providing good points of views.

Results

Data gotten was versatile and offered a lot of additional information and different aspects. First all the forms were read through making notes and notifying similarities and differences. It became clear that some situations require really detailed recordings and documentations and some participants have not used that many details in their documentation. This sets huge challenges to application in order it to be clear enough but similarly providing opportunity to document all relevant information as missing some details might lead not been able to identify all allergies.

Many participant announced that symptoms usually occur in minutes to in 24 hours. Usually they are looking eaten ingredients of other affecting factors in a 2 day to 2 week time range but also much longer time range investigation might be needed time to time. In some cases even many years listings were investigated in certain time range, like pollen and cross allergies to foods in the spring time.

Also in these results one big factor was if mother breastfeed the child or not because in those cases mom needs to monitor her eaten ingredients and in some cases medications too and have separate documentation. One important thing appearing in results and answers was also to monitor that child that can not eat everything is still getting all important vitamins and nutrients needed. Also how child reacts to certain foods and how is she/he eating was being documented. Factors that needed most often documentation was different kind of symptoms (like rash, urticaria, loose stools and stomach aches and quality of sleep).

Some participants used charts where they added marks for example to matching factors. Pictures were taken of symptoms like rash. One main point was to notice that need to document different kind of features varies considerably and some participants need to document everything really detailed which was also considered to be much work and time consuming. Many need to document the food amount and intensity of the symptoms.

Many participants were missing clear lists for allergy doctor on eaten ingredients and symptoms that would keep updated. Many were missing summaries of eaten ingredients and symptoms inside certain time range.

Prediction if something seems to be causing symptoms regularly seems to be problem and very onerous task. Finding frequencies in paper listings of ingredients and symptoms was found hard and difficult to handle.

Factors that delayed allergies tracking were forgetting to document all relevant factors and also that participant was not able to observe connection between ingredient and symptoms, some times because of ingredient was eaten rarely. On some cases finally some tests have provided results of other factors causing symptoms like intestinal bacteria intensifying symptoms or pollen/mold causing it. One really challenging factor remain amounts of foods. Some children had suitable ingredients in small amounts and not too often but bigger quantity caused symptoms.

Discussion

Like assumed, some of the answers were shorter not providing that widely information but many answers were quite comprehensive and having answers to open ended questions from many different participants provided broader information and understanding. One participants diary and documentation examples and charts showed the amount of details and work it might require when doing the documentation. Overall answering the research questions were successful and large amount of data provided different point of views that were needed.

Adding all the user requirements will not be easy task as it is seen also from existing applications which have not being able to do so. Some kind of customization to views and choices would be needed in the sense that each users situations can be very different. Breastfeeding has to be considered separately and if user would not want to have too much details she/he would be able to keep simpler documentation similarly as it would be possible somehow to custom to answer more detailed documentation needs. Details could be needed from amounts of food, severity of symptoms and details about symptoms (like composition or amount of stool of vomit).

There are factors that need to be documented often and that especially should be made easy. There should be ability to customize often used products including listing of that items ingredients so that all the ingredients would be easily added to documentation without writing them repeatedly. Recording should be made as effortless and fast as possible so that users would have time and energy to add all relevant information and detection of allergies would not fail due to missing information even if amount of documented features would be large. Still it would be important to remain options to document specific details and add details to notes also afterwards.

Application should support multiple users so that data would be easy to collect and share information between parents or other relevant people involved if wanted (like grandparents).Additionally some kind of predictions of possible factors affecting symptoms if some cause-effect relationships could be found would help users to notice these relationships if they miss connection themselves when trying to observe listings. It is important to make also clear views and listings to help users observe themselves collected data and ability to make reports that could be shown to other parties (like allergy doctor).

Attachments:

- Online survey question form (Google forms) with 12 open ended questions