ASTHMA IN THE NETHERLANDS

PATIENT INTELLIGENCE REPORT - BY ASTHMA PATIENTS

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1. INTRODUCTION

PURPOSE OF THE STUDY

Asthma is one of the most common chronic illnesses, affecting millions of adults and children worldwide\(^1\). There has been a sharp increase in the global prevalence, morbidity, mortality, and economic burden associated with asthma over the last 40 years, particularly in children. Approximately 300 million people worldwide currently have asthma, and its prevalence increases by 50% every decade.\(^2\) Globally, the economic costs associated with asthma exceed those of tuberculosis and HIV/AIDS combined.\(^3\) The indirect costs represent not just costs relating to the patient but, if the patient is a child, also to their family; in England, 69% of parents or partners of parents of asthmatic children reported having to take time off work because of their child’s asthma, and 13% had lost their jobs.\(^4\)

Few studies have been done in the Netherlands regarding the views of patients on their adherence towards their asthma inhaler and their usage of the inhaler.

Patient Intelligence Panel (PIP Health) is a patient research company implementing patient insight researches through their patient panel in order to gain insights in healthcare from the patient’s perspective. By doing so PIP Health aims to improve quality of care by providing the insights on patient’s behaviour to increase adherence to all stakeholders in the healthcare environment.

**Research Objective:** To gain quantitative insights from asthma patients in NL about their adherence and views on their asthma treatment.

**Research Goals:** To investigate whether people perceive themselves as compliant and what features in an inhaler they see as added value to their treatment in asthma.

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\(^4\) European lung white book. 2003 European Respiratory Society and the European Lung Foundation. Brussels, Belgium:
METHODOLOGY

The method used for this study was an online survey among 495 adult patients and 71 adolescents (13-17 years old) diagnosed with Asthma in the Netherlands. Incentives are paid to ‘Astma Fonds’, the main Asthma charity in the Netherlands.

PIPH’s patient panel secured the study sample, programmed the questionnaire and performed the online fieldwork.

Potential study participants from the PIPHealth panel that indicated in their profile that they are diagnosed with Asthma were sent an email message inviting them to participate in an internet survey on Asthma. The email stated that the survey would take 10 minutes to complete and offered an incentive of a EUR 1 donation towards their chosen charity. The email provided a link where respondents would be able to complete the survey.

The sampling plan was designed to generate a sample size of 500 adult participants and 50 adolescent participants to guarantee a robust sample for analysis in the sample group of persons diagnosed with asthma. From the adult data set, five respondents were deleted from the raw data file as we expected that they filled in the survey twice due to the fact that exactly the same IP numbers were discovered. And due to the amount of interest of the adolescents we were able to over recruit and secure a sample of 71 adolescents.

The questionnaire entailed questions following the below themes:

- Demographics
- Self Rated Compliance perception
- Diagnosis & treatment validation
- Device use & satisfaction with their device
- What are they looking for in an inhaler? (indicators, look, feel, etc)

Some of the open answers are presented in Dutch tables to maintain the participant’s voice and true meaning of their explanations. Translations can be provided.

ACCURACY OF THE RESULTS

The results from the survey sample should be interpreted in accordance with a certain probability, as there is always a possibility that the results obtained differ from the results which would be obtained if the entire population were included, i.e. all
patients diagnosed with asthma in the Netherlands were to be involved in the study.

Based on the probability theory, margins can be calculated within which the sample deviations will almost certainly remain. To determine the limits of accuracy the total number of respondent's are included beneath each table in the report.

2. SUMMARY & CONCLUSIONS

The purpose of the study was to investigate the adherence and views of Dutch asthma patients using inhalers as treatment. The research was conducted through online interviews with a sample of 495 adults and 71 adolescents with asthma in the Netherlands.

Profile of respondents

All respondents are diagnosed with Asthma. Gender distribution is 79% female and 21% male. There is an equal distribution of geographic location in the Netherlands. The average age bracket of the adults is 36-45 with a minimum age range of 18-25 and maximum age range of >75. For the adolescents the average age was 16.

Compliance perception

Both adults and adolescents believe they are rather compliant, respectively they scored 79% and 58%. But as can be seen from the differences in responses, the adolescents admit to having more difficulty in doing exactly what the doctors say when it comes to their asthma treatment when they were asked to rate themselves on a scale of 1-7, whereby 1 is absolutely NOT compliant. The adults scored on average 5.44 and the adolescents 4.66, with 34% of adults stating that believe they are absolutely compliant versus 7% of the adolescents. This highlights again that the adolescents are more hesitant about the compliance issue. For both groups, about 40% experience ‘not many’ or ‘non-severe’ complaints or admit they are not regular users. Half of the total population mention that they experience breathing problems and/or muggy feelings (benauwdheid) when they do not adhere to their treatment.

There seems to be a contradiction in the perception of compliance and actual compliance with 58% of the adults admitting they do not ‘always’ take the medication exactly as prescribed. The mean average is 2.05 which is towards ‘always’, however compliance is measured by the fact that patients follow the instructions of their doctor. Almost a half the respondents stop their medication ‘now and then’ with 64% changing the dosage of their medication ‘rarely’, ‘sometimes’, ‘often’ or ‘always’. 70% of the adults admit that they try to avoid taking their medication.
It appears that adult men are more inclined to be compliant than women, this difference was found to be significant when a t-test was conducted. Furthermore, as expected, younger people tended to be less compliant than older people. People younger than 36 years old score lower on self rated compliance than people older than 45 years old. This difference in compliant scores on the self rating scale is significant.

**Asthma Treatment & Usage**

Adults have on average 1.58 inhalers in use, 50% use Ventolin, 16% Symbicort and another 16% Flixotide. 23% answered OTHER in the treatment question, of which many indicate they use 'salbutamol' which is the compound name. This is a pity with regards to the analysis as we cannot perform cross analysis when such a large part of the sample selected OTHER (40% in the ‘Other’ group indicated they use Seritide, 9% mentioned Salbutamol).

For the adolescents 61% use Ventolin, 19% Flixotide and again 13% chose ‘Other’ and on average they have 1.28 inhalers in use. So both groups tend to use more than one inhaler.

Those most in use and the inhalers the participants thought of during the rest of the survey were the following inhalers for adults and adolescents respectively:

**Adults:**

1. Ventolin (33%)
2. ‘Other’ (17%)
3. Symbicort (12%)
4. Flixotide (10%)
5. Foster Seritide (6%)
6. Spiriva, Pulmicort, Foradil, Bricanyl and Alvesco (3%)
7. Qvar, Atrovent (2%)
8. Singulair (1%)

**Adolescents:**

1. Ventolin (49%)
2. Flixotide (13%)
3. ‘Other’ (12%)
4. Floradil, Bricanyl, Onbrez (4%)
5. Foster Seritide, Symbicort (3%)
6. Qvar, Alvesco, Atrovent, Singulair, Spiriva (1%)

42% of adults use their inhaler primarily to relieve their symptoms only, while 21% use it to prevent symptoms only. 37% use the inhaler to achieve both effects.

45% of adolescents use their inhaler primarily to relieve their symptoms only, while 27% use it to prevent symptoms only. 28% use the inhaler to achieve both effects.

On average participants in the study have had their inhaler between one and five years and the adults use their inhaler on average 10 times per week, which accounts for more than once per day. The adolescents use their inhaler on average less frequently with a mean score of 5.75 times per week which is less than once a day.
A third of the adults (37%) admit that there are moments in a day that they don’t use their inhaler versus 59% of the adolescents. In the open answers they describe why they do not use the inhaler at certain moments and most say they do not have a feeling they should use it as they do not have problems breathing or feeling wheezy. Another commonly report remark from the open answers is that they only feel the need to use the inhaler when becoming active (in sport for example).

The asthma population in the Netherlands comes across rather loyal to the brand of their inhaler with 60% of the adults and 75% of the adolescents indicating they have never switched their brand of inhaler. Of the people that did switch, half of both the adolescents and adults (50% and 52%) switched because they needed a more effective inhaler. Only 5% of the adults had difficulties in handling the inhaler, none of the adolescents chose that answer. 14% of adults switched to go from 2 inhalers to one, only 5% of the adolescents did the same. 19% of adults and 10% of adolescents just did not like the inhaler and switched for that reason. A large group of the total population chose the ‘Other’ option and indicated in the open answers that they switched on advice from the doctor, the pharmacist or due to the side effects.

People keep and use their inhaler in different places, there are no significant differences in where people keep or use it. Adolescents (40%) keep their inhaler in their bedroom which is a much larger proportion than the adults (20%).

**Features of inhaler**

On average all respondents think it is easy to use an inhaler and are quite satisfied with their inhaler. The overall satisfaction with the inhaler scored between ‘Very satisfied’ and ‘Fairly satisfied’. Interestingly the participants that score themselves as non-compliant score lower on the feature: ‘After you have used the inhaler, do you have the feeling that you used it correctly’, this could indicate that there is a relationship between the confirmation of correct use of a medical device and compliance.

Even though almost all adults are ‘very’ or ‘fairly satisfied’ with their inhaler, 43% would see it as a benefit if the inhaler would show how many uses the inhaler still contains. 18% think carrying options are important, 14% the feel and 13% the weight (Look and colour did not get many responses with respectively 3% and 2%).

The adolescents chose more options in the features that they think are important, an astonishing 75% think it is important for the inhaler to show the amount of uses the inhaler has remaining, 39% think packaging is important, 33% value the feel, 28% the weight and both look and colour were chosen by 10%. 
86% of adolescents and 75% of adults agree with the statement 'it would be a benefit if the inhaler would indicate when I would need to order a new supply.' Almost all people included in this study, 95% of adolescents and 94% of adults agree with the statement 'it would be a benefit if the inhaler would indicate how many uses (puffs) it still contains.'

The mean average score on this scale was 1.32 (wherby 1 is Totally agree and 2 is Agree) which underlines the importance of the demand for this feature from a adolescent point of view. This suggests that an indicator about how many uses the inhaler can still provide is of utmost importance to the adult user. Adolescents consider this even more important than the adults who scored this feature with a mean average of 1.44.

**Recommendations**

Do patients see the benefits from being compliant? This is a question which cannot be answered by the findings from this study. It seems that on the whole the patients feel they are really compliant, however they do not follow the instructions of the doctors exactly. It would be interesting to further investigate and find out the dynamics in this behaviour.

This study shows a clear need for innovation in the asthma medical device/ inhaler environment. People see value in help with self regulating and self management of their asthma condition. A direct link with compliance was not determined in this study between enhanced features and improved adherent behaviour.

This study illustrates the perceptions of patients diagnosed with asthma with regards to their views on their compliance and their inhaler. A further study could be undertaken focusing on patients with asthma and what their perceptions are with regards to their condition. This would enable healthcare professionals and other stakeholders in the environment to segment the market on a patient level. A validated ‘Illness Perception Questionnaire’ is available and it could be interesting to do an exercise with a similar group of respondents to segment the patients, which would allow for the provision of the correct treatments, services and communications to each segment.

Furthermore it would be worthwhile considering undertaking a more in-depth qualitative study that follows 20 asthma patients over a period of 7 months to discover their experiences and healthcare encounters.
3. PROFILE OF RESPONDENTS

The population for this study consists of 495 adults and 71 adolescents diagnosed with asthma in the Netherlands.

3.1 ADULTS

The 495 respondents were distributed among 194 (39%) men and 301 (61%) women. Respondents were evenly spread across the Netherlands. The age bracket most selected was 26-35 years old, the mean score was 3.09 therefore an average age of 36-45.

The age distribution is as follows:

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>84</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>26-35</td>
<td>119</td>
<td>24</td>
<td>41</td>
</tr>
<tr>
<td>36-45</td>
<td>83</td>
<td>16.8</td>
<td>57.8</td>
</tr>
<tr>
<td>46-55</td>
<td>113</td>
<td>22.8</td>
<td>80.6</td>
</tr>
<tr>
<td>56-65</td>
<td>72</td>
<td>14.5</td>
<td>95.2</td>
</tr>
<tr>
<td>66-75</td>
<td>22</td>
<td>4.4</td>
<td>99.6</td>
</tr>
<tr>
<td>&gt;75</td>
<td>2</td>
<td>0.4</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>495</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1. Age distribution (n = 495)*

*Figure 1. Age distribution (n = 495)*
The respondents were asked to indicate whether they suffered from other conditions. Around a fifth of the respondents were also diagnosed with allergies, 14% with migraine and 12% with eczema, 11% were also suffering from bronchitis and 11% with COPD, 7% were also suffering from chronic pain.

### 3.2 ADOLESCENTS

The 72 respondents were distributed among 19 (27%) boys and 52 (73%) girls. Respondents were evenly spread across the Netherlands. The age bracket most selected was between 16-17 years old, the mean score was 5.13 therefore an average age of 16.

The age distribution is as follows:

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>24</td>
<td>32</td>
</tr>
<tr>
<td>Percentage</td>
<td>4%</td>
<td>4%</td>
<td>13%</td>
<td>34%</td>
<td>45%</td>
</tr>
</tbody>
</table>

*Table 2. Age distribution (n = 72)*

*Figure 2. Age distribution (n = 72)*
4. COMPLIANCE PERCEPTION

All of the respondents got an explanatory text about the definition of compliance. “Compliance is the degree in which the use of the medication matches with what the doctor, in collaboration with the patient, has recommended. A lot of people are having difficulties to take their medication exactly right. Not everyone can maintain the same level of compliance for the total duration of a treatment or for chronic treatment.”

The Dutch version of this text is included in the appendix holding the Dutch questionnaire for both the adults and adolescents. The introduction text about compliance was rewritten to make sure the younger participants in the study understood the question regarding their compliance.

Firstly all respondents were asked whether they believed that they were compliant or not where after they had to rate themselves on a scale of 1-7. At the end of the questionnaire the MARS self rating scale was integrated to provide a validated measurement on the respondents compliance behaviour.

4.1 COMPLIANCE PERCEPTION: ADULTS

Around 80% (79%) of respondents consider themselves as compliant to their treatment, only 21% think they are NOT compliant with their treatment for asthma. After this initial question on compliance we asked them to rate their compliance on a scale of 1-7 whereby 1 is absolutely NOT compliant and 7 is absolutely compliant with the treatment. 5% indicate they are absolutely NOT compliant. The mean average score of this self rating question is 5.44, which shows that the majority of participants are strongly inclined to consider themselves compliant with the treatment as prescribed by the doctor.

![Figure 3: To what extent would you say you are compliant with your medication? (n=495)](chart)
We asked the people who answered 1, 2, 3 or 4, what kind of complaints they encounter when not being compliant. This was an open answer question, after coding the open answers, the division in complaints encountered by patients when not being compliant are displayed in the chart below. A large number of respondents do not have a lot of complaints when not being compliant and explain that they only use the inhaler when they have problems, therefore when they do not have problems they do not use the inhaler and are non compliant according to the definition.

![Chart showing complaints encountered when not being compliant]

**Figure 4: As you consider yourself not compliant can you please specify which complaints you have experienced when not being compliant? (n=95)**

There seems to be a contradiction in the perception of compliance and actual compliance with 58% of the adults admitting they do not 'always' take the medication exactly as prescribed. The mean average is 2.05 which is towards 'always', however compliance is measured by the fact that patients follow the instructions of their doctor. Almost a half of the adult participants stop their medication 'now and then' with 64% changing the dosage of their medication 'rarely', 'sometimes', 'often' or 'always'. 70% of the adults admit they try to avoid taking their medication.

See below the figures and mean score graphs belonging to the statements posed to the participants regarding their adherence.
I take my medication before I’m going to do an activity that makes it difficult to breath

- Always: 11%
- Often: 20%
- Sometimes: 27%
- Rarely: 14%
- Never: 28%

If possible, I try to avoid taking my medication

- Always: 13%
- Other: 17%
- Sometimes: 23%
- Rarely: 17%
- Never: 30%

exactly as prescribed (mean=2.05)  
my other treatments fail (mean=4.22)
It appears that adult men are more inclined to be compliant than women, this difference was highlighted as significant when a t-test was conducted. Furthermore, as expected, younger people tended to be less compliant than older people. People younger than 36 years old score lower on self rated compliance than people older than 45 years old. This difference in compliant scores on the self rating scale is shown to be significant in the t-test.

### 4.2 COMPLIANCE PERCEPTION: ADOLESCENTS

58% of the adolescents consider themselves as compliant and 42% think they are NOT compliant with their treatment for asthma. After this initial question on compliance we asked them to rate their compliance on a scale of 1-7 whereby 1 is absolutely NOT compliant and 7 is absolutely compliant with the treatment. 7 % indicate they are absolutely NOT compliant. In this scaling question we see that the adolescents see themselves a bit more compliant than when they were asked in a Yes/No answer. This could indicate that the adolescents do not know exactly how to deal with compliance.

![Figure 5: To what extent would you say you are compliant with your medication? (n=72)](chart)

We asked the adolescents who answered 1, 2, 3 or 4 what kind of complaints they encounter when not being compliant. This was an open answer question, after coding the open answers, the division in complaints encountered by patients when not being compliant are displayed in the chart below. A large number of respondents
do not have a lot of complaints when not being compliant and explain that they only use the inhaler when they have problems, therefore when they do not have problems they do not use the inhaler and are non compliant according to the definition. Furthermore as expected and like the adults, the adolescents experience their breathing problems again when not being compliant with their treatment.

Figure 6: As you consider yourself not compliant can you please specify which complaints you have experienced when not being compliant? (n=24)

Figure 7: Are you prepared to take the medication as prescribed by the doctor? (n=72)
5. ASTHMA TREATMENT & USAGE

The following section shows the results of the questions regarding the inhalers the respondents use and the reasons why they use these. All respondents are using inhalers for their asthma.

5.1 ASTHMA TREATMENT & USAGE: ADULTS

On average adults have 1.58 inhalers in use, meaning they own more than one brand/type of inhaler on average.

Figure 8: Which inhalers do you use at the moment? (multiple answers possible) (n=495)
Which Other treatment do you use for your asthma

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seretide</td>
<td>49</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>10</td>
</tr>
<tr>
<td>None</td>
<td>8</td>
</tr>
<tr>
<td>Serevent</td>
<td>8</td>
</tr>
<tr>
<td>Don’t know</td>
<td>7</td>
</tr>
<tr>
<td>Oxis</td>
<td>6</td>
</tr>
<tr>
<td>Beclomethason</td>
<td>3</td>
</tr>
<tr>
<td>Cyclohaler</td>
<td>2</td>
</tr>
<tr>
<td>Foster</td>
<td>2</td>
</tr>
<tr>
<td>Nasonex</td>
<td>2</td>
</tr>
<tr>
<td>Sinestic</td>
<td>2</td>
</tr>
<tr>
<td>Airomir</td>
<td>1</td>
</tr>
<tr>
<td>Assieme</td>
<td>1</td>
</tr>
<tr>
<td>Berodual</td>
<td>1</td>
</tr>
<tr>
<td>Combivent</td>
<td>1</td>
</tr>
<tr>
<td>Fentolin</td>
<td>1</td>
</tr>
<tr>
<td>flutide forte</td>
<td>1</td>
</tr>
<tr>
<td>Gelomyrtol</td>
<td>1</td>
</tr>
<tr>
<td>Handihaler</td>
<td>1</td>
</tr>
<tr>
<td>Lomudal</td>
<td>1</td>
</tr>
<tr>
<td>Novolizer</td>
<td>1</td>
</tr>
<tr>
<td>Redihaler</td>
<td>1</td>
</tr>
<tr>
<td>Rhinocort</td>
<td>1</td>
</tr>
<tr>
<td>Seravent</td>
<td>1</td>
</tr>
<tr>
<td>Spiriva Respimat</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3: N = 113 (please note that the patients filled in these responses, PIP Health is not responsible for mentioned brands/treatment options)

For the remainder of the questionnaire the participants had to chose which inhaler they use MOST, the questions asked after this point were answered with this one inhaler in mind.
Figure 9: The rest of this survey will be about the inhaler you use most for your asthma, please select the one you use most: (n=495)

More than one third of the adults with asthma use their inhaler both for a relief in symptoms and to prevent symptoms. 21% indicate that they use their inhaler as a preventer for asthma symptoms. 42% use their inhaler primarily to relieve their symptoms only.
On average the participants in this study have used their current inhaler between one and five years (37%). 50% have used this inhaler for longer than 5 years.
On Average the adult participants use their inhaler ten times (10.42) per week which accounts for more than once a day. 31% suggested that they use their inhaler very rarely by indicating that they use it zero times a week or less than once a day. 41% answered that they use the inhaler about twice a day.
There are moments that people do not use the inhaler, 37% answered that there are moments in a day that they do not use your inhaler. This question was asked to the total population, taking into account that 31% have already indicated that they use the inhaler zero times a week or less than once a day.

60% have never switched the brands of their inhaler which suggests brand loyalty. 40% have switched. The reason why people switch is mostly due to the fact that their medication was not effective enough anymore and they need something better or stronger.
A quarter of the sample switched for other reasons than the options that were provided in the questionnaire and were asked to provide these in the form of an open answer. The 47 open answers were then divided into three groups. Reasons for switching within the ‘Other’ group were mostly on the doctor’s advice (49%) or the pharmacist advised to switch (some mention that they do not understand why exactly but the pharmacist delivered a new inhaler). A third of the group said they switched due to the side effects they were experiencing. A few of those mention pain in their throats and two mention they felt irregular heartbeats.

People with asthma tend to keep their inhaler in their bag and can possibly be interpreted as the most popular answer due to the large amount of women in the sample, however significant differences were not found in the answers on where they keep and use their inhaler.

Figure 14: Where do you normally keep your inhaler? (n=495)
Most of the people who answered ‘OTHER’ mentioned that they carry the inhalers around in their clothes or mention that they have several places where they leave their inhalers. They use the inhaler mostly at home.

![Figure 15: Where do you use your inhaler most often? (n=495)](image)

5.2 ASTHMA TREATMENT & USAGE: ADOLESCENTS

![Figure 16: Which inhalers do you use at the moment? (multiple answers possible) (n=72)](image)
On average adolescents have 1.28 inhalers in use, meaning they own more than one brand/type of inhaler on average. This is less than the adults who on average have 1.58 inhalers in use.

<table>
<thead>
<tr>
<th>Which Other treatment do you use for your asthma</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>becotide</td>
<td>1</td>
</tr>
<tr>
<td>ceretide</td>
<td>1</td>
</tr>
<tr>
<td>Don't know</td>
<td>3</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>1</td>
</tr>
<tr>
<td>Seretide</td>
<td>2</td>
</tr>
<tr>
<td>Sobultumal</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4: N = 9 (please note that the patients filled in these responses, PIP Health is not responsible for mentioned brands/treatment options)

For the remainder of the questionnaire the adolescent participants had to chose which inhaler they use ‘MOST’, the questions asked after this point were answered with this one inhaler in mind.

Figure 17: The rest of this survey will be about the inhaler you use most for your asthma, please select the one you use most: (n=72)
28% of the adolescents with asthma use their inhaler both for a relief in symptoms and to prevent symptoms. 27% indicate that they use their inhaler as a preventer for asthma symptoms and 45% use their inhaler primarily to relieve their symptoms only.

Figure 18: Please indicate what you use this inhaler for? (n=71)

On average almost a half of the participants younger than 17 years old in this study have used their current inhaler between one and five years (48%). 31% have used this inhaler for longer than 5 years.

On average the adolescent participants use their inhaler 5.75 times per week which accounts for less than once a day. 62% suggested that they use their inhaler very
rarely by indicating that they use it zero times a week or less than once a day. 18% answered that they use the inhaler about twice a day and 18% use the inhaler about once a day.

**Figure 20: How often do you use your inhalator per week? (n=71)**

There are moments that people do not use the inhaler, 59% answered that there are moments in a day that they do not use their inhaler. These adolescents briefly described why they do not use their inhaler at certain moments during the day.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I do not need it / when not stuffy (benauwd)</td>
<td>20</td>
</tr>
<tr>
<td>Forgetting</td>
<td>4</td>
</tr>
<tr>
<td>When I am not active</td>
<td>8</td>
</tr>
<tr>
<td>Ik wil er niet als een sukkel uit zien.</td>
<td>1</td>
</tr>
<tr>
<td>Ik wil niet afhankelijk worden en ik denk dat ik best zonder kan</td>
<td>1</td>
</tr>
<tr>
<td>In de zomer heb ik minder last van mijn astma dus dan heb ik geen medicijnen nodig.</td>
<td>1</td>
</tr>
<tr>
<td>Feestjes</td>
<td>1</td>
</tr>
<tr>
<td>Ik wil het niet gebruiken, dus ik gebruik het nooit.</td>
<td>1</td>
</tr>
<tr>
<td>Ben eigenwijs</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 5: N = 38** (please note that the patients filled in these responses, PIP Health is not responsible answer options)

75% have never switched the brands of their inhaler which suggests brand loyalty. 25% have switched. The main reason why people switch is mostly due to the fact that their medication was not effective enough anymore and they need something better or stronger.
Eight adolescents switched for other reasons than the options available in the questionnaire. Six of them were advised by their doctor to switch, one mentioned that he switched as now he only needed to use the inhaler once a day and one mentioned that it was cheaper but with the same efficacy.

The adolescents tend to keep their inhaler in their bedroom or in their bags.
6. FEATURES OF INHALER

FEATURES OF INHALER: ADULTS

Respondents were asked to score the inhaler they used most recently in relation to the following 10 statements focusing on the features of the inhaler. The mean scores show all on average scored between 1 and 2.

The next figure displays the scale used and where the ‘Overall satisfaction’ mean average score (1.49) lies on that scale, all other scores fall between 1.39 (Was it easy to prepare the inhaler for use?) and 1.62 (Was it easy to keep the inhaler clean and in good working condition?). This displays that users in general find it ‘very’ easy to use their inhalers and overall were satisfied with their inhaler. The adults were asked to score the inhaler they used most recently in relation to the following statements regarding the features of the inhaler.
<table>
<thead>
<tr>
<th>Question</th>
<th>Very</th>
<th>Fairly</th>
<th>Some-what</th>
<th>Not very</th>
<th>Hardly at all</th>
<th>Mean average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was it easy to prepare the inhaler for use?</td>
<td>69%</td>
<td>21%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
<td>1.39</td>
</tr>
<tr>
<td>Was it easy to use the inhaler?</td>
<td>75%</td>
<td>16%</td>
<td>7%</td>
<td>1%</td>
<td>1%</td>
<td>1.43</td>
</tr>
<tr>
<td>Has it been easy to learn how to use the inhaler?</td>
<td>73%</td>
<td>16%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>1.46</td>
</tr>
<tr>
<td>Did the inhaler fit your lips comfortably?</td>
<td>58%</td>
<td>27%</td>
<td>10%</td>
<td>3%</td>
<td>1%</td>
<td>1.46</td>
</tr>
<tr>
<td>Was using the inhaler easy in terms of size and weight?</td>
<td>60%</td>
<td>26%</td>
<td>10%</td>
<td>2%</td>
<td>1%</td>
<td>1.49</td>
</tr>
<tr>
<td>Overall, considering your responses to the previous questions, were you satisfied with the inhaler?</td>
<td>68%</td>
<td>21%</td>
<td>8%</td>
<td>2%</td>
<td>1%</td>
<td>1.49</td>
</tr>
<tr>
<td>After you’ve used the inhaler, do you have the feeling that you used it correctly?</td>
<td>67%</td>
<td>21%</td>
<td>8%</td>
<td>3%</td>
<td>1%</td>
<td>1.52</td>
</tr>
<tr>
<td>Was it easy to carry the inhaler with you?</td>
<td>67%</td>
<td>18%</td>
<td>12%</td>
<td>2%</td>
<td>2%</td>
<td>1.55</td>
</tr>
<tr>
<td>Was it easy to continue normal activities with the use of the inhaler?</td>
<td>63%</td>
<td>24%</td>
<td>10%</td>
<td>1%</td>
<td>1%</td>
<td>1.6</td>
</tr>
<tr>
<td>Was it easy to keep the inhaler clean and in good working condition?</td>
<td>65%</td>
<td>25%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
<td>1.62</td>
</tr>
</tbody>
</table>

Table 6: How would you score the inhaler you have used in this last week on the following points? Choose only 1 response, the one that best reflects your opinion. There are no right or wrong answers. We simply want to know your opinion on certain features of the inhaler.

A number of specific criteria about an inhaler were posed to the participants and they could choose multiple answers about what they find important in their asthma inhaler. 43% of the adults want their inhaler to indicate how many inhalations are still available in their inhaler; furthermore carrying options are also important, however much less.
A ‘perfect’ inhaler should be effective, easy to use and indicate how many uses it can provide to the patient. Furthermore the active ingredient is important to the users. The table below shows the number of scores each feature received when the participants were asked to chose three features of the ‘perfect’inhaler.

<table>
<thead>
<tr>
<th></th>
<th>Most important</th>
<th>Second most important</th>
<th>Third most important</th>
<th>Combined importance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness of active ingredient</td>
<td>170</td>
<td>122</td>
<td>66</td>
<td>358</td>
<td>24%</td>
</tr>
<tr>
<td>Indicator that tells me how many puffs I can still use</td>
<td>75</td>
<td>97</td>
<td>129</td>
<td>301</td>
<td>20%</td>
</tr>
<tr>
<td>The active ingredient</td>
<td>137</td>
<td>85</td>
<td>18</td>
<td>240</td>
<td>16.2%</td>
</tr>
<tr>
<td>Ease of use</td>
<td>24</td>
<td>77</td>
<td>136</td>
<td>237</td>
<td>16.0%</td>
</tr>
<tr>
<td>Way of inhaling</td>
<td>46</td>
<td>41</td>
<td>59</td>
<td>146</td>
<td>10%</td>
</tr>
<tr>
<td>Indicator that tells me when to get new medication</td>
<td>15</td>
<td>48</td>
<td>45</td>
<td>108</td>
<td>7%</td>
</tr>
<tr>
<td>Size</td>
<td>23</td>
<td>21</td>
<td>26</td>
<td>70</td>
<td>5%</td>
</tr>
<tr>
<td>Weight</td>
<td></td>
<td>1</td>
<td>10</td>
<td>11</td>
<td>1%</td>
</tr>
<tr>
<td>Colour</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0%</td>
</tr>
<tr>
<td>Packaging</td>
<td></td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 7: What is most important for you when you are looking for a PERFECT inhaler. Please rank the top 3 most important aspects.
Figure 24: What is most important for you when you are looking for a PERFECT inhaler. Please rank the top 3 most important aspects.

We gave the participants two statements for which they indicated how much they agreed or disagreed with each statement. The first statement was: ‘It would be a benefit if the inhaler would indicate when I would need to order a new supply’. 75% agree with this statement and only 8% disagree. 41% indicated that they totally agree with this statement which shows the benefit of having this feature on their inhaler. The mean average score on this scale was 1.96. This is an overwhelming statement from the patients indicating that they consider this feature to be highly important.

Figure 25: It would be a benefit if the inhaler would indicate when I would need to order a new supply (n=495)
The second statement was even more strongly agreed with, where 94% agree with the fact that it would be a benefit if the inhaler would indicate how many uses (puffs) it still contains. The mean average score on this scale was 1.44 which underlines the importance of the demand for this feature from a patient point of view. This suggests that an indicator about how many uses the inhaler can still provide is of utmost importance to the user.

Figure 26: It would be a benefit if the inhaler would indicate how many uses (puffs) it still contains (n=495)

FEATURES OF INHALER: ADOLESCENTS

Respondents were asked to score the inhaler they used most recently in relation to the following 10 statements focusing on the features of the inhaler. The mean scores show all on average scored between 1 and 2.

The figure below displays the scale used and where the ‘Overall satisfaction’ mean average score (1.55) lies on that scale, all other scores fall between 1.42 (Was it easy to use the inhaler?) and 1.68 (Was it easy to keep the inhaler clean and in good working condition?). This displays that users in general find it ‘very’ easy to use their inhalers and overall were satisfied with their inhaler. The adolescents were asked to score the inhaler they used most recently in relation to the following statements regarding the features of the inhaler.
### Table 8: How would you score the inhaler you have used in this last week on the following points? Choose only 1 response, the one that best reflects your opinion. There are no right or wrong answers. We simply want to know your opinion on certain features of the inhaler.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Very</th>
<th>Fairly</th>
<th>Somewhat</th>
<th>Not very</th>
<th>Hardly at all</th>
<th>Mean average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was it easy to use the inhaler?</td>
<td>60%</td>
<td>31%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>1.42</td>
</tr>
<tr>
<td>Has it been easy to learn how to use the inhaler?</td>
<td>63%</td>
<td>26%</td>
<td>7%</td>
<td>3%</td>
<td>0%</td>
<td>1.48</td>
</tr>
<tr>
<td>Was it easy to prepare the inhaler for use?</td>
<td>64%</td>
<td>25%</td>
<td>10%</td>
<td>0%</td>
<td>0%</td>
<td>1.48</td>
</tr>
<tr>
<td>Overall, considering your responses to the previous questions, were you satisfied with the inhaler?</td>
<td>42%</td>
<td>29%</td>
<td>25%</td>
<td>1%</td>
<td>1%</td>
<td>1.55</td>
</tr>
<tr>
<td>Was using the inhaler easy in terms of size and weight?</td>
<td>50%</td>
<td>31%</td>
<td>14%</td>
<td>4%</td>
<td>0%</td>
<td>1.61</td>
</tr>
<tr>
<td>Did the inhaler fit your lips comfortably?</td>
<td>47%</td>
<td>38%</td>
<td>11%</td>
<td>3%</td>
<td>0%</td>
<td>1.65</td>
</tr>
<tr>
<td>Was it easy to continue normal activities with the use of the inhaler?</td>
<td>56%</td>
<td>29%</td>
<td>10%</td>
<td>4%</td>
<td>0%</td>
<td>1.68</td>
</tr>
<tr>
<td>After you’ve used the inhaler, do you have the feeling that you used it correctly?</td>
<td>53%</td>
<td>21%</td>
<td>19%</td>
<td>3%</td>
<td>3%</td>
<td>1.72</td>
</tr>
<tr>
<td>Was it easy to carry the inhaler with you?</td>
<td>49%</td>
<td>33%</td>
<td>14%</td>
<td>1%</td>
<td>1%</td>
<td>1.83</td>
</tr>
<tr>
<td>Was it easy to keep the inhaler clean and in good working condition?</td>
<td>51%</td>
<td>39%</td>
<td>7%</td>
<td>1%</td>
<td>0%</td>
<td>1.88</td>
</tr>
</tbody>
</table>

A number of specific criteria about an inhaler were posed to the participants and they could chose multiple answers about what they find important in their asthma inhaler. 75% of the adults want their inhaler to indicate how many inhalations are still available in their inhaler, furthermore carrying options are also important, as well as the feel and weight. It is apparent that the patients younger than 17 years old have more concerns about the features of their inhaler as they noted numerous features. Feel is much higher than in the adult part of the study, as is the look of the inhaler.
Figure 27: Which of the following criteria do you find important in an inhaler? (n=72)

We gave the participants two statements for which they indicated how much they agreed or disagreed with each statement. The first statement was: ‘It would be a benefit if the inhaler would indicate when I would need to order a new supply’. 86% agree with this statement and only 3% disagree. 44% indicated that they totally agree with this statement which shows the benefit of having this feature on their inhaler. The mean average score on this scale was 1.72. This is an overwhelming statement from the adolescent patients indicating that they consider this feature to be highly important. This is even much lower mean than the adults (1.96) score as a point of importance for this feature showing that adolescents find this even more important.
Figure 28: It would be a benefit if the inhaler would indicate when I would need to order a new supply (n=71)

The second statement was even more strongly agreed with, where 95% agree with the fact that it would be a benefit if the inhaler would indicate how many uses (puffs) it still contains, none of the group disagreed with the statement. The mean average score on this scale was 1.32 (wherby 1 is Totally agree and 2 is Agree) which underlines the importance of the demand for this feature from an adolescent point of view. This suggests that an indicator about how many uses the inhaler can still provide is of utmost importance to the user. Adolescents consider this slightly more important than the adults who scored this feature with 1.44 on average.

Figure 29: It would be a benefit if the inhaler would indicate how many uses (puffs) it still contains (n=71)
APPENDIX 1: ENGLISH QUESTIONNAIRE

Standard introduction text PIP (in invite email, no need to put this in the programming)
The survey will take approximately X minutes to complete. Before I start, I would like to assure you that:

- We act in accordance with the ABPI, MRS and BHBIA codes of conduct regarding anonymity and confidentiality - the aim of this market research study is to gain your views. We are also fully compliant with the Data Protection Act.
- Any information you disclose will be treated in the strictest confidence and the results are anonymised so no answers are attributable to any individuals.
- This study is being conducted on behalf of a pharmaceutical company. The company who is commissioning this research does not hold or see any information regarding respondents.

By entering the survey link you understand and agree to the following:

- I understand that the information I provide is for market research purposes only.
- I understand that my name will not be associated with my responses.
- Are you happy to proceed with the interview on this basis?

INTRODUCTION
Thank you for agreeing to take part in this market research survey. Click next to continue to the questions…

1. I am diagnosed with the following condition:
   
   Asthma [at least Asthma to go through]  
   + standard 100 conditions list PIP Health

2. I am
   
   Male
   Female

3. My age
   
   18-25
   26-35
   36-45
   46-55
4. In which region do you live?
   a. Utrecht.
   b. Gelderland
   c. Brabant
   d. Zeeland
   e. Limburg
   f. Noord Holland
   g. Zuid Holland
   h. Friesland
   i. Groningen
   j. Drenthe
   k. Flevoland
   l. Overijssel

Text: Compliance is the degree in which the use of the medication matches with what the doctor, in collaboration with the patient, has recommended. A lot of people are having difficulties to take their medication exactly right. Not everyone can maintain the same level of compliance for the total duration of a treatment or for chronic treatment.

5. Would you consider yourself as compliant with your Asthma medication?
   a. Yes, totally agree
   b. Yes, agree
   c. No, disagree
   d. No, totally disagree

6. To what extent would you say you are compliant with your medication? Where 1 is completely NON-compliant and 7 is completely compliant [scale 1-7]

   [next question Q7 only if answer to Q6 is low (1,2,3)]

7. If you consider yourself not compliant can you please specify which complaints you have experienced when not being compliant? (open)

8. Which inhalers do you use at the moment? [Multiple choice]
   a. Alvesco
   b. Atrovent
   c. Bricanyl
d. Flixotide
e. Foradil
f. FosterSeretide
g. Onbrez
h. Pulmicort
i. Qvar Extrafijne Aërosol
j. Singulair
k. Spiriva
l. Symbicort
m. Ventolin
n. Other, which? … (open)

[skip next, route to Q10 when only select 1 option]

9. The rest of this survey will be about the inhaler you use most for your asthma, please select the one you use most: [select from answer choices from previous Q8]

10. Please indicate what you use this inhaler for? [single choice]
    a. Relieve symptoms
    b. Prevent symptoms
    c. both

11. How long have you used this inhaler?
    <1 year
    1-5 years
    6-10 years
    11-15 years
    16-20 years
    >20 years

12. How often do you use your inhalator?
    (for example if you use it twice daily, fill in 14 times per week)
    ……times per week

13. Are there moments in a day that you do not use your inhaler? If so, why not?
    Yes, because (open)
    No

14. Have you ever switched the brand of your inhaler?
Yes
No [skip next question, routing to Q16]

15. Why did you switch the brand of your inhaler?
   a. The medication I had before was not effective enough
   b. I did not like the way of using the inhaler I had before
   c. I could not handle the inhaler I had before very well
   d. I switched from 2 inhalers to 1 inhaler
   e. OTHER, why? (Open)

16. How would you score the inhaler you have used in this last week on the following points? Choose only 1 response, the one that best reflects your opinion. There are no right or wrong answers. We simply want to know your opinion on certain features of the inhaler.
   [answer options:] Very, Fairly, Somewhat, Not very, Hardly at all
   • Has it been easy to learn how to use the inhaler?
   • Was it easy to prepare the inhaler for use?
   • Was it easy to use the inhaler?
   • Was it easy to keep the inhaler clean and in good working condition?
   • Was it easy to continue normal activities with the use of the inhaler?
   • Did the inhaler fit your lips comfortably?
   • Was using the inhaler easy in terms of size and weight?
   • Was it easy to carry the inhaler with you?
   • After you’ve used the inhaler, do you have the feeling that you used it correctly?
   • Overall, considering your responses to the previous questions, were you satisfied with the inhaler?

17. Which of the following criteria do you find important in an inhaler? Please select all that applies [multiple choice, multiple answers]
   a. If it tells me how many puffs I can still get
   b. look
   c. feel
   d. weight
   e. colour
   f. packaging and carrying options
   g. other, which?.... (open)

18. Where do you normally keep your inhaler?
19. Where do you use your inhaler most often?
   a. In the bathroom
   b. In the bedroom
   c. At the toilet
   d. At work
   e. At home
   f. In the car
   g. Other, ... (open)

Next you will be given two statements, please indicate how much you agree or disagree with each statement.

20. It would be a benefit if the inhaler would indicate when I would need to order a new supply
   a. Totally agree
   b. Agree
   c. neither agree nor disagree
   d. Disagree
   e. Totally disagree

21. It would be a benefit if the inhaler would indicate how many uses (puffs) it still contains
   a. Totally agree
   b. Agree
   c. neither agree nor disagree
   d. Disagree
   e. Totally disagree
22. What is most important for you when you are looking for a PERFECT inhaler. Please rank the top 3 most important aspects.
   a. size
   b. colour
   c. way of inhaling
   d. the active ingredient / component
   e. Indicator that tells me how many puffs I can still use
   f. Indicator that tells me when to get new medication
   g. Effectivity of active ingredient/ component
   h. Ease of use
   i. packaging
   j. weight

23. MARS adherence
The Medication Adherence Rating Scale (MARS) is a self-report measure of medication adherence. We use the MARS tool to determine your willingness and ability to take medication as prescribed as the doctor suggested.

   Always, Often, Sometimes, Rarely, Never
   a. I use my medication only when I need them
   b. I use my medicine every day
   c. If possible, I try to avoid taking my medication
   d. I use my medication only when I become short of breath or when I am scared.
   e. I forget to take my medicine
   f. I change the dosage of my medication
   g. I stop for a while taking my medication
   h. I use it as a spare for when my other treatments fail
   i. I take my medication before I'm going to do an activity that makes it difficult to breath or makes me wheezy
   j. I take my medication exactly as prescribed.

---

APPENDIX 2:DUTCH QUESTIONNAIRE: ADULTS

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Standaard introductie tekst PIP:
Het onderzoek neemt ongeveer 10 minuten in beslag. Voordat we beginnen wil ik u verzekeren dat:
• Wij handelen in overeenstemming met de gedragscodes met betrekking tot anonimiteit en vertrouwelijkheid - het doel van dit onderzoek is het verkrijgen van uw mening omtrent uw aandoening. We voldoen aan de regels van de Wet Bescherming Persoonsgegevens.
• Alle informatie zal strikt vertrouwelijk worden behandeld en de resultaten worden geanonimiseerd zodat de antwoorden nooit aan specifieke personen kunnen worden gekoppeld.
• Dit onderzoek wordt uitgevoerd in opdracht van een farmaceutisch bedrijf zodat ze betere producten en services kunnen ontwikkelen. Het bedrijf heeft absoluut geen toegang tot uw persoonlijke informatie.
Door mee te doen gaat u akkoord met het volgende:
• Ik begrijp dat de door mij verstrekte informatie uitsluitend bedoeld is voor marktonderzoek.
• Ik begrijp dat mijn naam niet aan mijn antwoorden verbonden zal worden.
• Ik wil graag mijn mening geven en wil dus doorgaan met de enquête op de basis die hierboven is beschreven.
Gaat u akkoord, klik dan de link om de enquête te starten

INTRO
Hartelijk bedankt dat u heeft besloten om deel te nemen aan deze enquête. Klik op volgende om door te gaan naar de vragen...

1. Ik heb een diagnose van de volgende aandoening(en), meerdere antwoorden mogelijk:
   Astma
   + Lijst 100 standaard aandoeningen in PIP panel

2. Ik ben
   Man
   Vrouw

3. Mijn leeftijd is
   18-25
   26-35
   36-45
   46-55
   56-65
   66-75
   > 75
4. In welke regio woon je?

a. Utrecht  
b. Gelderland  
c. Brabant  
d. Zeeland  
e. Limburg  
f. Noord Holland  
g. Zuid Holland  
h. Friesland  
i. Groningen  
j. Drenthe  
k. Flevoland  
l. Overijssel

tekst
De volgende vragen hebben te maken met therapietrouw. Therapietrouw is de mate waarin het gebruik van geneesmiddelen overeenkomt met wat de arts - in samenspraak met de patiënt - heeft aanbevolen. Veel mensen hebben moeite om hun medicijnen op de juiste manier te gebruiken. Niet iedereen houdt het vol om een kuur af te maken of langdurig medicijnen te gebruiken.

5. Vindt u dat u therapietrouw bent met uw astma medicatie?

a. Ja, volledig mee eens  
b. Ja, mee eens  
c. Nee, mee oneens  
d. Nee, volledig mee oneens

6. In welke mate zou u zeggen dat u trouw bent met uw medicatie? Hierbij is 1 volledig NIET therapietrouw en 7 volledig therapietrouw. [schaal 1-7]

[volgende vraag Q7 alleen als vraag 6 is beantwoord met lage score (1,2,3)]

7. Indien u zichzelf niet als therapietrouw beschouwt, kunt u dan aangeven welke klachten u ervaart wanneer u zich niet aan de behandeling houdt? (open)

8. Welke inhalator(en) gebruikt u op dit moment? [Multiple choice]

a. Alvesco  
b. Atrovent
c. Bricanyl
d. Flixotide
e. Foradil
f. FosterSeretide
g. Onbrez
h. Pulmicort
i. Qvar Extrafijne Aërosol
j. Singulair
k. Spiriva
l. Symbicort
m. Ventolin
n. Anders – welke? ...... [skip volgende vraag, route naar Q10 wanneer slechts 1 optie geselecteerd]

9. De rest van deze enquête zal gaan over de inhalator die u het meest gebruikt voor uw astma, selecteer alstublieft degene die u het meest gebruikt: [geef antwoord mogelijkheden die geselecteerd waren in vorige vraag Q8]

10. Kunt u aangeven voor welke behandeling u deze inhalator gebruikt? [enkele keuze]
   a. Ter verlichting van uw klachten (symptoombestrijding)
   b. Om eventuele klachten te voorkomen (preventie)
   c. beide

11. Hoe lang gebruikt u deze inhalator al?
   a. <1 jaar
   b. 1-5 jaar
   c. 6-10 jaar
   d. 11-15 jaar
   e. 16-20 jaar
   f. 20 jaar
12. Hoe vaak gebruikt u uw inhalator? (bijvoorbeeld als u deze twee keer per dag gebruikt, vul dan in 14 keer per week)
   a. ..... keer per week

13. Zijn er momenten op een dag dat u uw inhalator niet gebruikt? Zo ja, waarom niet?
   a. Ja, want (open)
   b. Nee

14. Bent u wel eens van merk van inhalator gewisseld?
   a. Ja
   b. Nee [skip volgende vraag, routing naar Q16]

15. Waarom bent u gewisseld naar een ander merk van inhalator?
   a. Het middel dat ik voorheen gebruikte was niet effectief genoeg
   b. De inhalator die ik voorheen gebruikte was niet prettig in gebruik
   c. Ik kon de inhalator die ik voorheen gebruikte niet goed hanteren
   d. Ik ben van 2 inhalatoren naar 1 inhalator overgestapt
   e. Anders – waarom?…….. (Open)

16. Hoe zou u de inhalator die u de afgelopen week hebt gebruikt beoordelen op de volgende punten? Kiest u voor ieder punt het antwoord dat het best overeenkomt met uw mening. Er zijn geen goede of foute antwoorden. We willen gewoon uw mening over bepaalde functies van de inhalator.

[Matrix Options:] Behoorlijk, Redelijk, Enigszins, Niet zo, Nauwelijks
   • Was het makkelijk om de inhalator te leren gebruiken?
   • Was het makkelijk om de inhalator klaar te maken voor gebruik?
   • Was het makkelijk om de inhalator te gebruiken?
   • Was het makkelijk om de inhalator schoon en in goede werkende orde te houden?
   • Was het makkelijk uw normale activiteiten te blijven doen naast het gebruik van de inhalator?
   • Paste de inhalator comfortabel in/aan uw mond?
   • Was het gebruik van de inhalator makkelijk in termen van grootte en gewicht?
   • Was het makkelijk om de inhalator mee te nemen?
   • Heeft u na het gebruik van de inhalator het gevoel dat u deze correct heeft gebruikt?
   • Was u over het geheel genomen, en rekening houdend met uw antwoorden op de vorige vragen, tevreden met de inhalator?
17. Welke van de volgende criteria vindt u belangrijk aan een inhalator? Selecteer alstublieft alles wat van toepassing is: [multiple choice, meerdere antwoorden mogelijk]

a. als hij me laat weten hoeveel pufjes ik nog kan krijgen
b. uiterlijk (look)
c. hoe hij aanvoelt (feel)
d. gewicht
e. kleur
f. verpakking en draagmogelijkheid
g. anders –welke ... (open)

18. Waar bewaart u uw inhalator gebruikelijk?

a. In mijn tas
b. In de badkamer
c. In de slaapkamer
d. In de keuken
e. Op een andere plek in huis
f. In de auto
g. Anders, waar? ....... (open)

19. Waar gebruikt u uw inhalator het meest?

a. In de badkamer
b. In de slaapkamer
c. op het toilet
d. op het werk
e. thuis
f. in de auto
g. Anders, waar? ....... (open)
U krijgt nu twee stellingen te zien. Geeft u alstublieft voor elke stelling aan in hoeverre u het hiermee eens of oneens bent.

20. Het zou een voordeel zijn als de inhalator aan zou geven wanneer ik een nieuwe voorraad moet bestellen.
   a. Helemaal mee eens
   b. Mee eens
   c. Niet mee eens maar ook niet oneens
   d. Oneens
   e. Helemaal oneens

21. Het zou een voordeel zijn als de inhalator aan zou geven hoeveel pufjes er nog in zitten.
   a. Helemaal mee eens
   b. Mee eens
   c. Niet mee eens maar ook niet oneens
   d. Oneens
   e. Helemaal oneens

22. Wat is het belangrijkste voor u wanneer u de perfecte inhalator zou uitkiezen. Geef alstublieft uw top 3 van belangrijkste aspecten.
   a. Grootte
   b. Kleur
   c. De manier van inhaleren
   d. De werkzame stof die erin zit
   e. Indicator die aangeeft hoeveel pufjes ik nog kan gebruiken
   f. Indicator die aangeeft wanneer ik nieuwe medicatie moet halen
   g. Effectiviteit van de werkzame stof
   h. Gebruiksgemak
   i. Verpakking
   j. Gewicht
   k. Anders, welke? (open)

23. MARS – therapietrouw schaal
    De therapietrouw schaal (in het Engels Medication Adherence Rating Scale, MARS) is een manier om zelf te rapporteren. We gebruiken de schaal om vast te stellen in
hoeverre u bereid en in staat bent om uw medicatie in te nemen zoals afgesproken met en voorgeschreven door uw arts.

Altiijd, vaak, soms, zelden, nooit

a. Ik gebruik mijn medicatie alleen wanneer ik het nodig heb
b. Ik gebruik mijn medicatie elke dag
c. Indien mogelijk, probeer ik het nemen van mijn medicatie te vermijden
d. Ik gebruik mijn medicatie alleen als ik kortademig word of wanneer ik angstig ben
e. Ik vergeet mijn medicatie te nemen
f. Ik pas de dosering van mijn medicatie aan
g. Ik stop een tijdje met mijn medicatie
h. Ik gebruik het als reserve voor als mijn andere behandelingen niet werken
i. Ik neem mijn medicatie voorafgaand aan een activiteit die het ademen moeilijk maakt of waar ik een piepende adem van krijg
j. Ik neem mijn medicatie precies zoals voorgeschreven

APPENDIX 3: DUTCH QUESTIONNAIRE: ADOLESCENTS

INTRO
Hartelijk bedankt dat je hebt besloten om mee te doen aan deze enquête. Klik op volgende om door te gaan naar de vragen...

1. Ik heb een diagnose van de volgende aandoening(en), meerdere antwoorden mogelijk:
   Astma + 100 aandoeningen standaard lijst PIP Health

2. Ik ben
   jongen
   meisje

3. Mijn leeftijd is [dropdown]
   12
   13
4. In welke regio woon je?
   a. Utrecht
   b. Gelderland
   c. Brabant
   d. Zeeland
   e. Limburg
   f. Noord Holland
   g. Zuid Holland
   h. Friesland
   i. Groningen
   j. Drenthe
   k. Flevoland
   l. Overijssel

tekst

5. Vind je dat je therapietrouw bent met je astma medicijnen, dus doe je altijd precies wat je hebt afgesproken met de dokter?
   a. Ja, volledig mee eens
   b. Ja, mee eens
   c. Nee, mee oneens
   d. Nee, volledig mee oneens

6. Kun je op een schaal van 1-7 aangeven hoe ‘therapietrouw’ je jezelf vindt, dus hoe je altijd doet wat je hebt afgesproken met de dokter over je astma medicijnen?
   Hierbij is 1 volledig NIET therapietrouw en 7 volledig therapietrouw. [schaal 1-7]
   [volgende vraag Q7 alleen als vraag 6 is beantwoord met lage score (1,2,3)]
7. Als je jezelf niet therapietrouw vindt, kun je dan aangeven welke klachten je krijgt wanneer je je niet aan de afspraken over je medicijnen houdt (dus als je niet de pufjes neemt)? (open)

8. Welke puffer gebruik je op dit moment? [Multiple choice]
   a. Alvesco
   b. Atrovent
   c. Bricanyl
   d. Flixotide
   e. Foradil
   f. FosterSeretide
   g. Onbrez
   h. Pulmicort
   i. Qvar Extrafijne Aërosol
   j. Singular
   k. Spiriva
   l. Symbicort
   m. Ventolin
   n. Anders – welke? ......

   [skip volgende vraag, route naar Q10 wanneer slechts 1 optie geselecteerd]

9. De rest van deze enquête zal gaan over de puffer die je het meest gebruikt voor je astma, dus selecteer alsjeblieft degene die je het meest gebruikt: [geef antwoord mogelijkheden die geselecteerd waren in vorige vraag Q8]

10. Kun je aangeven waarom je deze puffer gebruikt? [enkele keuze]
    a. Om de astma klachten te verlichten (symptoombestrijding)
    b. Om de astma klachten te voorkomen (preventie)
    c. beide

11. Hoe lang gebruik je deze puffer al?
    a. Minder dan 1 jaar
    b. 1-5 jaar
c. 6-10 jaar

d. 11-15 jaar

e. 16-17 jaar

12. Hoe vaak gebruik je je puffer?
   (bijvoorbeeld als je deze twee keer per dag gebruikt, vul dan in 14 keer per week)
   a. ..... keer per week

13. Zijn er momenten op een dag dat je je puffer niet gebruikt? Zo ja, waarom niet?
   a. Ja, want (open)
   b. Nee

14. Ben je wel eens van merk van puffer gewisseld?
   a. Ja
   b. Nee [skip volgende vraag, routing naar Q16]

15. Waarom ben je gewisseld naar een ander merk puffer?
   a. Het middel dat ik eerst gebruikte was niet effectief genoeg (werkte niet goed genoeg)
   b. De puffer die ik eerst gebruikte was niet prettig in gebruik
   c. Ik kon de puffer die ik eerst gebruikte niet goed hanteren
   d. Ik ben van 2 puffers naar 1 puffer overgestapt
   e. Anders – waarom?........ (Open)

16. Hoe zou je de puffer die je de afgelopen week hebt gebruikt beoordelen op de volgende punten? Kies voor ieder punt het antwoord dat het best overeenkomt met jouw mening. Er zijn geen goede of foute antwoorden. We willen gewoon je mening over bepaalde functies van de puffer.

[Matrix Options:] Behoorlijk, Redelijk, Enigszins, Niet zo, Nauwelijks
   • Was het makkelijk om de puffer te leren gebruiken?
   • Was het makkelijk om de puffer klaar te maken voor gebruik?
   • Was het makkelijk om de puffer te gebruiken?
   • Was het makkelijk om de puffer schoon en in goede werkende orde te houden?
   • Was het makkelijk je normale activiteiten te blijven doen naast het gebruik van de puffer?
   • Paste de puffer comfortabel in/aan je mond?
   • Was het gebruik van de puffer makkelijk in termen van grootte en gewicht?
   • Was het makkelijk om de puffer mee te nemen?
• Heb je na het gebruik van de puffer het gevoel dat je deze correct hebt gebruikt?
• Was je over het geheel genomen, en rekening houdend met je antwoorden op de vorige vragen, tevreden met de puffer?
17. Welke van de volgende criteria vind je belangrijk aan een puffer? Selecteer alsjeblieft alles wat van toepassing is: [multiple choice, meerdere antwoorden mogelijk]
   a. als hij me laat weten hoeveel pufjes ik nog kan krijgen
   b. uiterlijk (look)
   c. hoe hij aanvoelt (feel)
   d. gewicht
   e. kleur
   f. verpakking en draagmogelijkheid
   g. anders – welke … (open)

18. Waar bewaar je je puffer gebruikelijk?
   a. In mijn tas
   b. In de badkamer
   c. In de slaapkamer
   d. In de keuken
   e. Op een andere plek in huis
   f. In de auto
   g. Anders, waar? ……. (open)

19. Waar gebruik je je puffer het meest?
   a. In de badkamer
   b. In de slaapkamer
   c. op het toilet
   d. op school
   e. thuis
   f. in de auto
g. anders, waar? …… (open)

Je krijgt nu twee stellingen te zien. Geef alsjeblieft voor elke stelling aan in hoeverre je het hiermee eens of oneens bent.

20. Het zou een voordeel zijn als de puffer aan zou geven wanneer ik een nieuwe voorraad moet bestellen.
   a. Helemaal mee eens
   b. Mee eens
   c. Niet mee eens maar ook niet oneens
   d. Oneens
   e. Helemaal oneens

21. Het zou een voordeel zijn als de puffer aan zou geven hoeveel pufjes er nog in zitten.
   a. Helemaal mee eens
   b. Mee eens
   c. Niet mee eens maar ook niet oneens
   d. Oneens
   e. Helemaal oneens

22. Wat is het belangrijkste voor jou wanneer je de perfecte puffer zou uitkiezen. Geef alsjeblieft je top 3 van belangrijkste aspecten.
   a. Grootte
   b. Kleur
   c. De manier van inhaleren
   d. De werkzame stof die erin zit
   e. Indicator die aangeeft hoeveel pufjes ik nog kan gebruiken
   f. Indicator die aangeeft wanneer ik nieuwe medicatie moet halen
   g. Effectiviteit van de werkzame stof (hoe goed het medicijn werkt)
   h. Gebruiksgemak
   i. Verpakking
   j. Gewicht
   k. Anders, welke? (open)

23. MARS – therapietrouw schaal
De therapietrouw schaal (in het Engels Medication Adherence Rating Scale, MARS) is een manier om zelf te rapporteren. We gebruiken de schaal om vast te stellen in
hoeveer je bereid en in staat bent om je medicijnen in te nemen zoals afgesproken met en voorgeschreven door je dokter. Altijd, vaak, soms, zelden, nooit

k. Ik gebruik mijn medicatie alleen wanneer ik het nodig heb

l. Ik gebruik mijn medicatie elke dag

m. Indien mogelijk, probeer ik het nemen van mijn medicatie te vermijden

n. Ik gebruik mijn medicatie alleen als ik kortademig wordt of wanneer ik angstig ben

o. Ik vergeet mijn medicatie te nemen

p. Ik pas de dosering van mijn medicatie aan

q. Ik stop een tijdje met mijn medicatie

r. Ik gebruik het als reserve voor als mijn andere behandelingen niet werken

s. Ik neem mijn medicatie voorafgaand aan een activiteit die het ademen moeilijk maakt of waar ik een piepende adem van krijg

t. Ik neem mijn medicatie precies zoals voorgeschreven
Which of the following criteria do you find important in an inhaler? Please select all that applies [multiple choice, multiple answers] (total population N = 566)
It would be a benefit if the inhaler would indicate when I would need to order a new supply (adults N= 495, adolescents N = 71)

It would be a benefit if the inhaler would indicate when I would need to order a new supply (total population N = 566)
It would be a benefit if the inhaler would indicate how many uses (puffs) it still contains (adults N= 495, adolescents N = 71)

It would be a benefit if the inhaler would indicate how many uses (puffs) it still contains (Total population N =566)