COMPARISON OF TELEMEDICINE VERSUS IN-PERSON VISIT FOR CONTROL OF ASTHMA IN CHILDREN AGED 7-17 YEARS: A RANDOMIZED CONTROLLED TRIAL

THESIS SUBMITTED TO

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(PEDIATRICS)

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DECLARATION

I hereby declare that the thesis titled **"Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial"** embodies the original work carried out by the undersigned in All India Institute of Medical Sciences Jodhpur.

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This is to certify that the thesis titled **" Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial"** is the bonafide work of **Dr. Kkomal C Suvarna** carried out under our guidance and supervision in the Department of Paediatrics, All India Institute of Medical Sciences, Jodhpur.

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CERTIFICATE

This is to certify that the thesis titled **" Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial"** is carried out by **Dr. Kkomal C Suvarna** a postgraduate student in the Department of Paediatrics, AIIMS Jodhpur, in partial fulfillment of the requirement for the degree of **M.D. PAEDIATRICS** is a bonafide work done by her under our direct supervision and guidance.

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- Dr. Kkomal C. Suvarna

ABBREVIATIONS

ACT	Asthma Control Test
C-ACT	Childhood-Asthma Control Test
FEV1	Forced Expiratory Volume in 1 second
FEV1/FVC	The ratio of Forced Expiratory Volume in 1 second and Forced Vital Capacity
FVC	Forced Vital Capacity
GINA	Global Initiative for Asthma
ICS	Inhaled Corticosteroids
MDI	Metered Dose Inhaler
PQLI	Pediatric Quality of Life Index

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1. INTRODUCTION

Asthma is a heterogenous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheezing, shortness of breath, chest tightness, and cough that vary over time and in intensity, together with variable expiratory airflow limitation.[1]

Asthma is the most common, chronic non-communicable disease in children worldwide.[2] Asthma is a disease that requires ongoing monitoring by patients and health care professionals for effective management. There is evidence that the condition has better outcomes when managed by specialists of the same.[3]

Poor asthma outcomes depend on risk factors like increased exposure to environmental triggers[4], financial barriers[5], and reduced social support[6]. Poorly controlled asthma can lead to significant economic and social strain due to the costs associated with acute health care[7], the travel, and the time away from work for caregivers[8], especially for the patients residing in rural areas who need to travel long distances to consult their nearest asthma specialist[9].

Research done previously on this topic shows that the disease has better outcomes when associated with guidelines-based care[10], and this care is most likely when managed by an asthma specialist[3]. However, unfortunately, the patients having the greatest need for asthma specialists live in rural areas and low-income communities with difficult access to such care[11].

Most children with asthma achieve good disease control using maintenance low-dose inhaled corticosteroids (ICS).[12]Still, in contrast, some remain poorly controlled despite high-dose ICS treatment, often due to poor adherence which may lead to suboptimal care and frequent severe asthma attacks[13, 14]. Up to half of the patients at a tertiary care, pediatric asthma clinics are non-adherent (defined as taking <80% of the prescribed dose).[15]

The Global Initiative for Asthma (GINA) highlights that the suboptimal use of asthma treatment is a patient-specific barrier contributing to the burden of asthma[16]. One of the primary reasons for poor adherence is forgetfulness of medications and treatments. Delayed reporting of asthma symptoms and exacerbations is associated with morbidity and the need for emergency care[17].

The doctor: patient recommended by the WHO is 1:1000, but the current ratio in India is 0.62:1000. Of the doctors in India, 75% practice in urban areas where only 31% of India's population lives[18].

It has always been a challenge to deliver optimal healthcare to India's large population due to an overburdened healthcare system, which intensified during the COVID pandemic. Telemedicine has revolutionized medical services as an additional method of delivering healthcare medical services. Currently, 45% of the population in India has an internet connection, and 79% use a mobile phone[19]. This, along with the availability of economic internet connectivity, has further increased the use of telemedicine services. Through telemedicine, healthcare professionals were able to deliver healthcare to remote areas.

Telemedicine is an important component of the WHO's digital health strategy for 2020-2024 to facilitate equitable and universal access to health services and personalized care[20]. In a resource-limited country like India, the adoption of telemedicine has enabled health for 'all'.

The World Health Organization defines telemedicine as "The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for the diagnosis, treatment, and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities"." [21]

The beginning of telemedicine dates to 1972, when Murphy and Bird conducted 500 patient consultations via interactive television, and the first formal definition of telemedicine was born. In 1974, Bird defined telemedicine as 'the practice of medicine via an interactive audio-video communication system'[22]. With the advent of the internet and smartphones, telemedicine has been considered a viable option for the delivery of healthcare[23].

Telemedicine has become an increasingly popular form for patients to access medical care. It is viewed as a cost-effective alternative to the more traditional visits between the patient and the healthcare provider. In this novel method, there is more control for accessing healthcare with the patients. Hence, it is very likely that this method will increase as a large part of the move to adopt telemedicine is driven by

patient preference. The best advantage of using telemedicine is that it overcomes two barriers: distance and time[24].

Unfortunately, there is a lack of Indian studies performed comparing the effectiveness of physical visits versus telemedicine in the management of asthma and assessing the reduction in exacerbations or hospital admissions with the control provided by telemedicine follow-up. When proven effective, this can be extended to the follow-up of several chronic diseases, which will mainly be helpful for patients living in remote areas who are deficient in terms of finances to travel to health facilities.

2. REVIEW OF LITERATURE

Through this study, we would like to assess the utility of telemedicine in managing pediatric asthma patients. Several studies have been done to determine similar telehealth strategies, and we reviewed the literature for the same.

Published literature about the topic:

A study was conducted by Portnoy et al. [17] in the 'Children's Mercy hospital allergy clinic in Kansas City, Missouri. Children with a previous diagnosis of asthma, or if the reason for the hospital visit was asthma, were contacted and enrolled via voluntary self-selected allocation into two groups – telemedicine visit, and in-person visit. One hundred sixty-nine children were enrolled; 100 opted for in-person visits, and 69 opted for telemedicine visits. The 'patients' asthma control was assessed using Asthma Control Test (ACT) for 12 years and older, the Childhood Asthma Control Test (C-ACT for 4 to 11 years, and the Test for Respiratory and Asthma Control in Kinds (TRACK) for younger than four years, which was seen 3 times: at the first visit, 30 days, and 6 months after the first visit. The study demonstrated that telemedicine can be used to deliver care to children with asthma as effectively as in-person visits, with higher adherence to treatment in the telemedicine group.

An Indian study done on the same subject was conducted as an ambispective observational study in tertiary care institute in North India by Kumari et al.[25] Teleconsultation data of patients less than 18 years old with an appointment from April 2 2020 to May 15 2020 were reviewed retrospectively. Of a total of 247 patients with appointments, 18 could be contacted for teleconsultation, while 59 could not be due to various reasons. One hundred eighty-one patients could be managed, while 7 required physical evaluation. 83.5% of patients had the underlying disease under control and were refilled on the same prescription. The study showed that the majority of children with respiratory illnesses under follow-up care could be successfully managed with telemedicine.

Chan at al[26] conducted a study in the Department of Pediatrics, Tripler Army Medical Centre, Honolulu, Hawaii, where a total of 120 patients aged 6 to 17 years with persistent asthma were randomly assigned to the office-based or virtual group. Both groups were given the same ambulatory clinical pathway for 12 months. The

Office-based group received in-person education and case management, whereas the virtual group received computers, internet connections, and in-home internet-based case management. Virtual patients had greater adherence to daily symptom diaries and achieved excellent asthma control. Both groups experienced an improvement in quality of life and an increase in asthma knowledge, with no other differences in therapeutic or disease outcome measures.

Another observational, prospective cohort study was conducted in the Department of Pediatrics, University of Maryland Medical Centre, Baltimore, Maryland, by Gattu et al. [27]. Children aged 0-18 years presenting with signs of respiratory distress were included. The 4-item, 12-point respiratory scale was assessed by a pair of observers – face-to-face (FTF) and Telemedicine (T.M.). 48 patients and 135 paired observations were recorded. They showed a good to excellent range of inter-observer reliability (IOR) in nearly all elements of the score, indicating a high level of agreement between the 2 groups. This indicated that telemedicine is a reliable tool for assessing the severity of respiratory distress in children.

A study was conducted by Perry et al[28] in Arkansas, United states – a cluster, randomized control trial with 393 rural children (7-14 years) who received a school-based telemedicine asthma education intervention to usual care. At the enrolment, 88% of children had uncontrolled asthma symptoms, and at the end of the intervention, there were no statistically significant differences in reported symptom-free days for either group. Participants in the intervention group had significantly higher use of peak flow meters to monitor asthma, with no changes in other outcome measures like quality of life, asthma knowledge, or lung function.

A prospective cohort study was done by David A. Bergman et al. [29], approved by the Stanford University School of Medicine Institutional Research Board. Ninety-six participants aged 5-12 years, having asthma or answered positively to the ISAAC survey (international Survey of Allergy and Asthma in Children) from 3 elementary schools in San Francisco were enrolled, and the children who were already under the care of an allergist or pulmonologist were excluded. Each child was reviewed 4 times – at baseline, eight weeks, sixteen weeks, and thirty-two weeks from the baseline at their respective schools. At the baseline, each child was assessed via telemedicine by an asthma specialist and prescribed an asthma action plan and treatment

recommendations. At the subsequent visits, patient and parental asthma knowledge, healthcare utilization, and patient satisfaction were assessed. Also, the physical health, social health, and emotional health of the child and family were tested. There was also one home visit done by a research nurse between weeks 8-32 to assess potential environmental asthma triggers. The results of the study showed the feasibility, efficiency, and acceptance of telemedicine in bringing expert asthma care to underserved children in the school setting. The study demonstrated the program's effectiveness to ensure children with asthma received a comprehensive assessment and asthma action plan along with asthma education. There was a more efficient use of the time of asthma ' 'subspecialist's time as compared to a hospital-based asthma clinic. There was a significant improvement seen in the functional health status outcomes.

A study was done in Milwaukee Veteran Affairs Medical Centre (VAMC) between January 1998 and December 31, 2004, among adult patients by Raza et al. [30], the common diagnosis being COPD, benign pulmonary nodule, bronchial asthma, and lung cancer. Telemedicine consultation was done for all 314 patients (684 visits), and 41% of patients had a change in management, only 8% required in-person visits. Telemedicine saved patients 473340 km of travel throughout the study period. The telemedicine encounters were done by 6 board-certified subspecialists, between the pulmonary physician at the Milwaukee site and the patient and nurse or respiratory technologist – .T.R.T. at the Iron Mountain VAMC telemedicine site. Results of the study showed that telemedicine is feasible and acceptable to patients, provides improved access for patients to pulmonary subspeciality care, and saved travel time for patients. Hence the study shows that telemedicine is one of the many possible alternatives for the delivery of healthcare to rural areas.

A randomized controlled pre-post interventional study was done at the Annoor Sanatorium for chest diseases and the Al-Mafraq Pediatric Hospital by Shdaifat et al. [31] between December 2018 and March 2019. Patients of age 5-11 years with moderate to severe uncontrolled asthma (based on Global Initiative for Asthma guideline) on metered dose inhalers (MDI) and having an internet connection with communication devices were enrolled and randomized. Patients in the intervention group were educated via video call sessions, scheduled every 4 weeks for 12 weeks. The results of the study showed that the telemedicine group showed improvement in asthma control

with the reduced number of asthma exacerbations, with a significant improvement in the C-ACT score. Currently, most children are well versed with technology, and telemedicine can be used as a novel method for the management of pediatric asthma patients, especially in rural areas with limited access to healthcare.

A study was done by Wendy brown et al. [32] in the town of Oakes, North Dakota, under North Dakota State University. It was a prospective cohort pilot study to evaluate the use of telemedicine for asthma education in a rural underserved area. A videoconferencing system was used. Adult patients were self-enrolled or referred by health providers in the area. A Certified Asthma Educator (AE-C) and pharmacy staff assessed spirometry and validated surveys, including Asthma Control Test (ACT) and inhaler technique. Over one year, the AE-C provided face-to-face real-time telemedicine education to the patients. Patients met monthly for the initial three months, followed by every three months. Asthma control, inhaler technique, and asthma diary use were assessed at every visit. Thirty-eight patients were screened for inclusion, with 20 qualifying for the intervention. There was high study participation, and 85% of the eligible participants completed the entire follow-up period of 1 year. Based on the results of the study (good control by ACT score more than or equal to 20, a slight improvement in 'patients' FEV1, and reduction in unscheduled clinic visits for acute asthma), it was seen that patients with asthma can be effectively managed through telemedicine technology, but larger randomized controlled trials necessary to confirm present study findings.

Apart from these observational and interventional studies, there have been several systematic reviews done on telemedicine use in asthma. Here, we will review some of those.

A systematic review was done in October 2020 by Pearce CJ et al. [33] at the University college London with several other colleges of London. 6 databases were systematically searched for randomized controlled trials measuring adherence to inhaled corticosteroids (ICS) in children with asthma. Of the 240 studies identified, 25 were eligible for inclusion. Of the 25 studies, 13 were categorized as highly reliable. 9 of these 13 interventions were effective at increasing adherence and 6 of these met criteria for PAPA (Perceptions and Practicality Approach) intervention. Techniques targeting perception and practicalities included reminders, rewards, feedback,

monitoring for adherence, pharmacological support, and information regarding triggers for symptoms and nonadherence. The study claims to be the first review to summarise effective interventions to increase adherence in children with asthma. The adherence interventions in children with asthma were found to have mixed effectiveness. Effective intervention studies were found to be more frequently of higher quality. But due to the small number of included studies and variable study design quality, the results and conclusions which were drawn from this study are preliminary.

Another systematic review was done by Culmer N et al. [34] to evaluate outcomes for school-age children with asthma involving asthma-based telemedical education, conducted at the College of Community Health Sciences, The University of Alabama, Tuscaloosa, Ala. Based on guidelines of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), four databases were searched, and a total of 408 articles were identified based on inclusion criteria of children aged 5-18 years having asthma, school-based studies with telemedicine support given. Of them, 5 met the inclusion criteria – 3 studies were randomized and 2 were cohort studies. Data extracted was regarding participant background, research methods, purpose, and outcomes. The systematic review concluded that real-time telemedical delivered asthma education improved the quality of life, enhanced the symptom management ability of patients, and reduced the burden of the disease. No study showed any negative effects due to the use of telemedicine. But although no evidence of additional burden was found, the review also found varied results regarding the benefits. Hence, it was suggested that more studies be done to consider telemedical delivered asthma care.

Next, we review another systematic review done by the Department of Pediatrics, University of California Davis Health by Christopher H. Kim et al. [35]. This study reviewed original articles (randomized clinical trial (RCT), observational study, and quasi-experimental study) which had been published in English with patients having a diagnosis of asthma of the age group less than 18 years with the intervention of study being school-based telemedicine. The initial search identified 371 articles for screening and 98 relevant ancestral articles, and after the removal of duplicate records, a total of 171 articles were found. Finally, seven studies were used for this systematic review. 5 of these seven studies were quasi-experimental studies, two were

randomized clinical trials and 1 was a cluster-RCT. All were longitudinal studies and had a follow-up ranging from 12-56 weeks. All the studies were conducted in the United States, with four studies in urban settings and three studies in school-setting. All the participants of the seven included studies had ages varying from 3 years to 18 years old. The review revealed that four studies reported significant positive results in the form of increased symptom-free days and/or decreased asthma symptom frequency. However, as there was variation in the study methodologies and study quality, with over 70% of the studies using quasi-experimental designs with potential for bias, it was difficult to conclude. Hence, it was concluded that for publishing robust evidence on the topic, higher-quality RCT design studies were needed.

Table 1: Review of literature

S. No.	Author	Year	Type of Study	Sample Size/Population	Outcome
1.	Jay M. Portnoy et al[17]	2016	Randomised Controlled Trial – Non-inferiority	169 patients aged less than 18 years (100 in-person visits, 69 telemedicine visits)	Telemedicine can be used to deliver care to children with asthma that is as effective as in-person visits (at least based on measurements of ACT) while maintaining high levels of satisfaction in the patients who participated. Adherence with the study was greater in the telemedicine group than in the in-person group.

2.	Jyoti Kumari et al. [25]	2020	Ambispective Observational Study	188 patients aged less than 18 years (181 via telemedicine, seven via physical)	In the majority of children with respiratory illnesses, successful follow-up care can be provided by telemedicine.
3.	Debora S. Chan et al[26]	2006	Randomised Controlled Trial	120, aged 6-17 years, 60 patients in each group	Internet-based telemedicine is an effective adjunctive method to monitor children with asthma at home. The increasing availability of low-cost technology and Internet access will very likely add this capability to the armamentarium of ambulatory management tools for children with asthma.
4.	Rajender Gattu et al[27]	2013	Prospective Cohort Study	48 patients aged 0-18 years	There is a good to excellent IOR (Inter-Observer Reliability) among care providers in the clinical evaluation of respiratory distress in children using T.M. (Telemedicine) compared with traditional FTF (Face to face) evaluation. Results suggest that T.M. may be an effective and reliable

					tool for the remote assessment of respiratory distress in children.
5.	Tamara T. Perry et al[28]	2018	Cluster Randomised Trial	393 children aged 7-14 years (194 intervention, 199 usual care)	Although there was some evidence of behavior change among intervention participants, these changes were inadequate to overcome the significant morbidity experienced by this highly symptomatic rural, impoverished population. Future interventions should be designed with a multifaceted approach that considers caregiver engagement, distance barriers, and inadequate access to asthma providers in rural regions.
6.	David A. Bergman et al[29]	2007	Prospective Cohort Study	96 subjects aged 5-12 years	The study has demonstrated the feasibility, efficiency, and acceptance of using a telemedicine link to bring expert asthma care to underserved children in the school setting. The results also demonstrate the effectiveness of the program in ensuring that children identified with

					asthma receive a comprehensive assessment, asthma action plan, and asthma education. The use of a telemedicine link also allowed for more efficient use of asthma subspecialist's time when contrasted with hospital-based asthma clinics. Finally, there were significant improvements in functional health status outcomes.
7.	Tasleem Raza et al. [30]	2008	Descriptive study	314 patients aged 36-89 years	It was found that patients were significantly more satisfied with telemedicine than in-person care in terms of convenience of visit and overall satisfaction with care. From an economic perspective, telemedicine decreased lost productivity and saved travel costs in this study. The study demonstrates that telemedicine is one of many possible solutions for rural subspecialty health care delivery.

8.	Mu'min Billah M. Shdaifat et al[31]	2021	Randomised Controlled Trial	90 children aged 5-11 years (45 in intervention and control group each)	The results of this study provide strong evidence of the potential applicability of telemedicine in targeted populations, considering its positive reported impacts on health service utilization, cost reduction, and improvement in the quality of life. Telemedicine is an innovative, key method to improve access to vulnerable pediatric asthma patients in rural areas considering the limited access to specialized care providers.
9.	Wendy brown et al[32]	2014	Prospective Cohort Pilot Study	20 patients aged 7-77 years	The current intervention was able to demonstrate that telemedicine technology can be used to successfully deliver asthma education that helps patients to gain and maintain asthma control. By extension, analysis suggests that telemedicine may also lead to better health outcomes and lower societal costs for providing health care.

10.	Christina J. Pearce et al[33]	2022	Systematic Review	25 Randomised Controlled Trials of children with asthma	Adherence interventions in children with asthma have mixed effectiveness. Effective intervention studies were more frequently of higher quality, were tailored to individuals' perceptual and practical adherence barriers, and used multiple BCTs. However, due to the small number of included studies and varying study design quality, the conclusions drawn are preliminary.
11.	Nathan Culmer et al[34]	2020	Systematic Review	Five articles on school-aged children with asthma (3 Randomised Controlled Trails, 2 Cohort studies)	Results of real-time telemedical delivered asthma education to improve QOL, enhance symptom management ability, and reduce symptom burden were positive or nonsignificant. No study indicated negative effects due to telemedicine.

12.	Christopher H. Kim et al[35]	2020	Systematic Review	Seven studies of school-aged asthma patients, 2 of which were Randomised Controlled Trials	High-quality evidence supporting the use of school-based telemedicine programs to improve patient outcomes is limited. While available evidence suggests benefit, only two comparative trials were identified, and the contribution of telemedicine to these studies' results is unclear.

Here, we see that several studies have been done to assess the uses of telemedicine in patients with asthma, but very few have been done to compare the effectiveness of telemedicine and physical visits for the management of children with asthma. The study done to compare both has been done in the setting of a developed nation, with the use of digital stethoscopes and spirometers, which is not feasible in all settings. Hence, with this background, we planned a randomized controlled trial comparing the efficacy and safety of telemedicine with an in-person visit in children aged 7 to 17 years diagnosed with childhood asthma.

3. LACUNAE IN THE EXISTING LITERATURE

1. Lack of adequate research on the scope of telemedicine in managing asthma in children
2. Although several studies have compared telemedicine with an in-person visit among asthmatic adults, studies on this aspect in the pediatric population are lacking.

4. RESEARCH QUESTION

Is telemedicine, as compared to in-person visits, non-inferior (assessed by ACT[36]/C-ACT[37] scores) in terms of asthma control evaluated at three months in children aged 7 to 17 years with asthma?

5. AIM AND OBJECTIVES

5.1 Primary objective

- To compare Childhood Asthma Control Test (C-ACT[37]) score and Asthma Control Test (ACT[36]) score in children with asthma at three months in Telemedicine and in-person visits.

5.2 Secondary objectives

- To compare the asthma control assessed by GINA[38]
- To compare the number of asthma exacerbations requiring oral steroids in two groups
- To compare the number of asthma exacerbations requiring hospital emergency visits in two group
- To assess the patient's quality of life
- To determine the satisfaction of patients/parents with telemedicine

6. MATERIALS AND METHODS

6.1 Study design: Randomized Control Trial (Non-inferiority trial)

6.2 Study Setting: Pediatric Chest Clinic, Department of Pediatrics, AIIMS Jodhpur

6.3 Study duration: January 2021 to October 2022

6.4 Ethical approval: Approved by Institutional Ethics committee, dated 12 March 2021. IEC Number: AIIMS/IEC/2021/3390

6.5 Clinical trial registry Number: 2022/10/046828

6.6 Eligibility criteria:

Inclusion criteria:

- Children from 7 years to 17 years with a previous diagnosis of asthma or if the reason for hospital visit included asthma
- Children whose parents give consent to participate in the study and are willing for follow up
- Patients having a smartphone with good internet connectivity

Exclusion criteria:

- Children whose parents refuse to give consent to participate in the study
- Children with chronic conditions like chronic kidney disease, chronic liver disease, congenital heart disease, rickets, diagnosed endocrinological disease, recent surgeries, or any other concurrent condition warrant in-person visits.
- Children with ≥1 exacerbation per week
- Children with a history of exacerbation in the last week requiring hospital admission

6.7 Sample Size:

Based upon a previous study, we assumed a standard deviation of 4.5 for the C-ACT[37] score at three months and took two as non-inferiority margin (as this is the most acceptable minimal important difference), a sample size of 174 (87 in each arm)

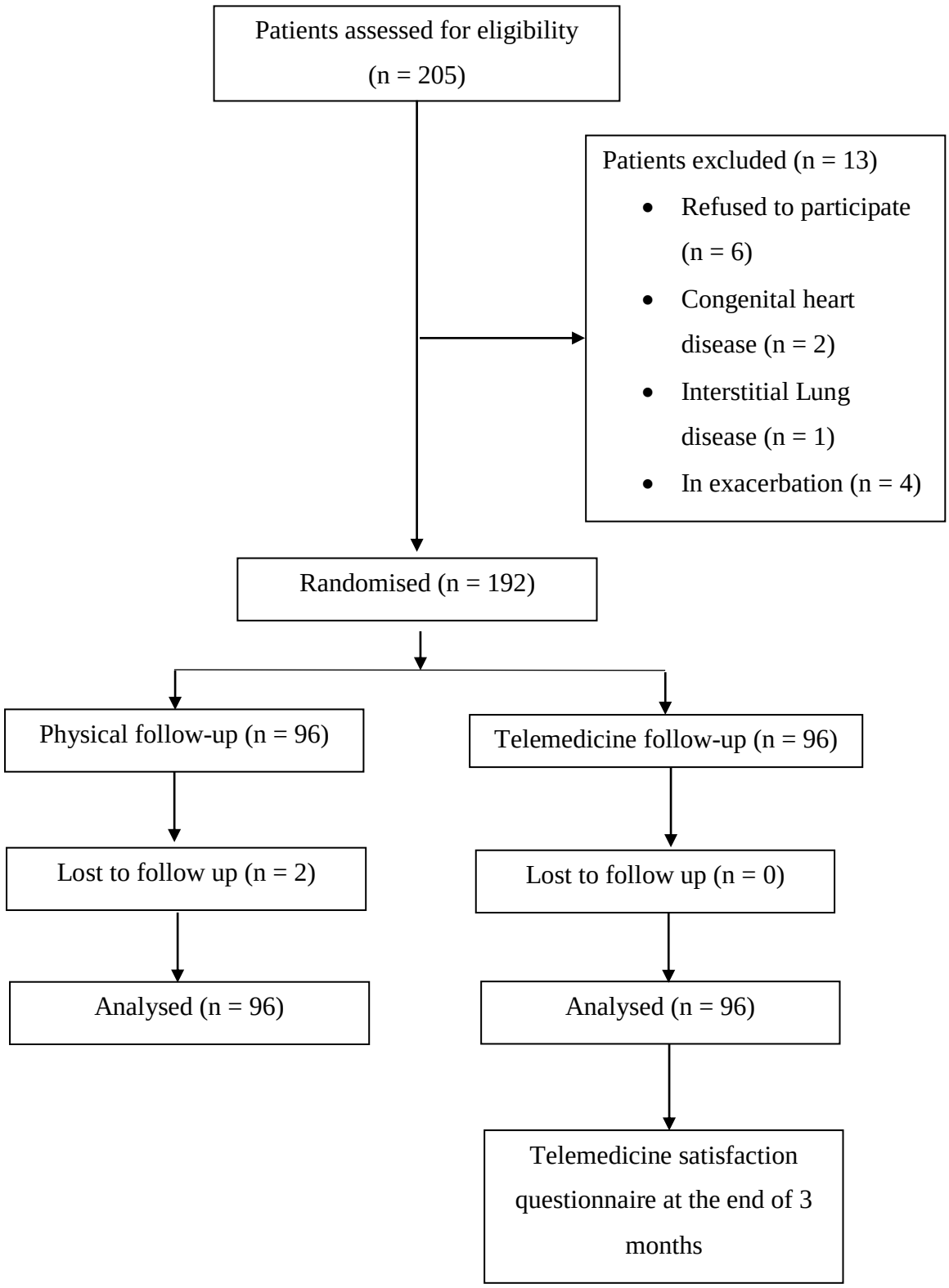
is required for 90% power and 5% significance level. Considering the 10 % drop-out rate, the desired sample size was 192 (91 in each group).

6.8 Data collection:

- Children aged 7-17 years having a previous diagnosis of asthma or if the reason for their visit included asthma were enrolled in the study. The flow of the study is depicted in Figure 1.
- Patients identified as potential participants were identified and contacted during OPD visits, and informed consent was obtained by filling out the form for participating in this study.
- Patients were randomized into two groups: Physical visits or telemedicine.
- Randomization: Block randomization design was used. One of the investigators not directly involved in the recruitment or clinical care generated the randomization sequence using the www.randomizer.com website and constructed randomly varying, permuted, even-numbered blocks for each stratum. These block sizes were concealed until the end of the study.
- Allocation Concealment: The randomized sequence slips were kept in serially number opaque, sealed envelopes. The first investigator opened the envelope only after getting written consent and allocated the participant into one of the groups as written on the slip.
- Baseline clinical details were recorded in pre-structured proformas. All patients in both groups were evaluated 3 times – at the first visit, at 1 month, and 3 months after the initial visit.
- Asthma control was assessed at every visit with the help of the **Asthma Control Test (ACT)**[36] for patients 12 years and older, and the **Childhood Asthma Control Test (C-ACT)**[37] for patients from ages 7-11 years.
- GINA asthma control was assessed by the GINA asthma control questionnaire.[38]
- The technique was evaluated during a video call/physical visit, and compliance was assessed from the number of empty doses of MDI.

- Quality of life was assessed by a pediatric asthma life quality questionnaire.[39]
- The Telemedicine process involved the use of video calling from OPD to the patient. The video call was done using the Whatsapp video calling feature. All the calls to telemedicine visit group patients were performed by a single investigator. The patient was enquired regarding asthma control based on ACT[36]/C-ACT[37] and GINA[38] asthma control guidelines. Quality of life was also assessed using the PQLI score[39]. During video-calling, queries regarding disease management were answered and the patients were observed for:
- Overall clinical appearance
- any visible respiratory distress/disease exacerbations – increased respiratory rate/efforts, nasal flaring, chest retractions, cough,
- any new complaints of fever, cough, coryza, difficulty in breathing, night-time awakening, disease-related restriction in physical activities
- assessment and guidance regarding the correct technique of usage of inhalers, care of inhalers, use of the right medications
- counseling regarding the chronic nature of the disease, and the importance of good compliance and prompt contact with health care facilities in case of worsening of symptoms/exacerbation of the disease
- Patients in the Telemedicine group were given a **Telemedicine Satisfaction Questionnaire**[40] at the end of 3 months to assess satisfaction with telemedicine, experience of telemedicine follow-up, and ability to follow up with health facility without having to travel for the same.

Figure 1: Flow chart describing the enrolment



6.9 Data Analysis:

Data collected were entered into the pre-structured proformas (Case record form) and then manually transferred into a Microsoft excel worksheet. Categorical variables were described as percentages, normally distributed numerical variables as means (with S.D.s), and those with skewed distributions as medians (first and third quartiles). Skewness was determined by using the Shapiro-Wilk test and the Q-Q plot. Categorical outcome variables were compared by using the Chi-square test or ' 'Fisher's exact test as appropriate. Numerical variables were compared by using the ' 'Student's t-test or Mann–Whitney U test as applicable. SPSS version 23 (IBM SPSS Statistics, IBM Corporation) was used for statistical analysis. A p-value of less than 0.05 was considered statistically significant. Intention to treat analysis was used for the study.

6.10 Consent:

Informed consent was obtained from the participant's parents/guardians. The purpose and design of the study were explained to the child's parents/guardians. The parents/guardians were informed that they can ask to withdraw from the study at any time without having reasons for the same.

6.11 Confidentiality:

The confidentiality of information obtained was maintained and revealed only to the doctor/auditor involved in the study and if required to regulatory authorities.

7. OBSERVATIONS AND RESULTS

A total of 192 children already having asthma or the visited the hospital included asthma, were enrolled after having met the inclusion and exclusion criteria of the study. These patients were then divided into two groups: Telemedicine visits and Physical visits. Asthma control was assessed by using ACT[36]/C-ACT[37] scoring, as well as by GINA[38] asthma control guidelines. Quality of life was assessed by using the PQLI[39] score, and technique and compliance were assessed. Baseline spirometry was also done.

7.1 Demographic details of the subjects:

A total of 192 subjects with a mean age of 11.7 (17 ± 3.0 SD) in the telemedicine group and 11.5 (11.5 ± 3.0 SD) in the physical group were enrolled. Among the 192 children, 69 were males (71.9%) in the telemedicine group, 68 were males (70.8%) in the physical group, and the rest were females. In terms of age, sex, and anthropometric parameters, there was no significant difference between the two groups. Characteristics of the study groups are shown in Table 1.

Table 2: Baseline demographic characteristics of study participants (n = 192)

Variables	Telemedicine visits (n = 96)	In-person visits (n = 96)
Age (years), mean (SD)	11.71 (3.0)	11.5 (3.0)
Male sex, n (%)	69 (71.9%)	68 (70.8%)
Weight (kg), Z score	-0.70 (0.98)	-0.68 (0.96)
Height (cm), Z score	0.12 (1.35)	0.50 (1.25)
BMI, Z score	-0.98 (0.89)	-0.91 (0.93)

7.2 Other baseline characteristics of the study population: There was no significant difference in baseline smoke exposure, exposure to pets, co-morbidities, parental education, and occupation. Characteristics of the study groups are shown in Table 2.

Table 3: Other baseline characteristics of study participants (n = 192)

Variables	Telemedicine visits (n = 96)	In-person visits (n = 96)
Smoke exposure, n (%)	62 (71.9%)	50 (52.1%)
Exposure to pets, n (%)	64 (66.7%)	52 (54.2%)
Comorbidity: allergic rhinitis, n (%)	37 (38.5%)	38 (39.6%)
Seasonal variation, n (%)	91 (94.8%)	89 (90.6%)
Mother's education status, n (%)		
-Illiterate	3 (3.1%)	4 (4.1%)
-Primary	5 (5.2%)	9 (9.3%)
-Secondary	81 (84.3%)	40 (41.6%)
-Graduate and above	26 (27.1%)	24 (25%)
Father's education status, n (%)		
-Primary	5 (5.2%)	6 (6.2%)
-Secondary	57 (59.3%)	56 (58.3%)
-Graduate and above	34 (35.4%)	34 (35.4%)
Mother's occupation, n (%)		
-Unemployed	61 (63.5%)	59 (61.4%)
-Skilled/Professional	35 (36.4%)	37 (38.5%)
Father's occupation, n (%)		
-Skilled	27 (28.1%)	31 (32.3%)
-Professional	69 (71.8%)	65 (67.7%)

7.3 Baseline lung functions and variables of asthma control: Among the 192 participants, there were 39 (45.9%) in the telemedicine visits group and 46 (54.1%) in the in-person visits group with uncontrolled asthma at baseline, as per GINA[38] asthma control guidelines. The mean ACT[36]/C-ACT[37] score at baseline in the telemedicine visits group was 17.54 (17.54 ± 3.31 SD) and the in-person visits group was 16.57 (16.57 ± 3.17 SD), indicating poor disease control. These findings are depicted in Table 3.

Table 4: Baseline lung functions and variables of asthma control

Variables	**Telemedicine visits (n = 96)**	**In-person visits (n = 96)**
FEV1, mean (SD)	73.78 (17.77)	73.63 (15.52)
FVC, mean (SD)	80.14 (17.68)	79.51 (17.35)
FEV1/FVC, mean (SD)	91.66 (14.19)	100.55 (64.02)
ACT/C-ACT, mean (SD)	17.54 (3.31)	16.57 (3.17)
GINA asthma control, n (%) -uncontrolled -partially controlled -uncontrolled	 -39 (45.9%) -33 (46.5%) -24 (66.7%)	 -46 (54.1%) -38 (53.5%) -12 (33.3%)
PQLI score, mean (SD)	57.2 (10.2)	56.1 (11.7)

7.4 Study outcomes for Telemedicine versus In-person visits: Among the 192 participants, ACT[36]/CACT[37] scores, GINA[38] asthma control, and asthma quality of life using the PQLI39 questionnaire were assessed at, one month and three months from baseline. The number of exacerbations requiring oral steroids/emergency visits were noted in both groups. At the end of 3 months, the telemedicine satisfaction questionnaire[40] was provided to those in the telemedicine group. It was found that there was no significant difference in the mean ACT[36]/C-ACT[37] scores in the telemedicine group (19.88 ± 2.71 SD) or the in-person visit group (20.48 ± 2.12 SD), p-value: 0.09 at the end of 3 months. The primary and secondary outcomes of the study are shown in Table 4.

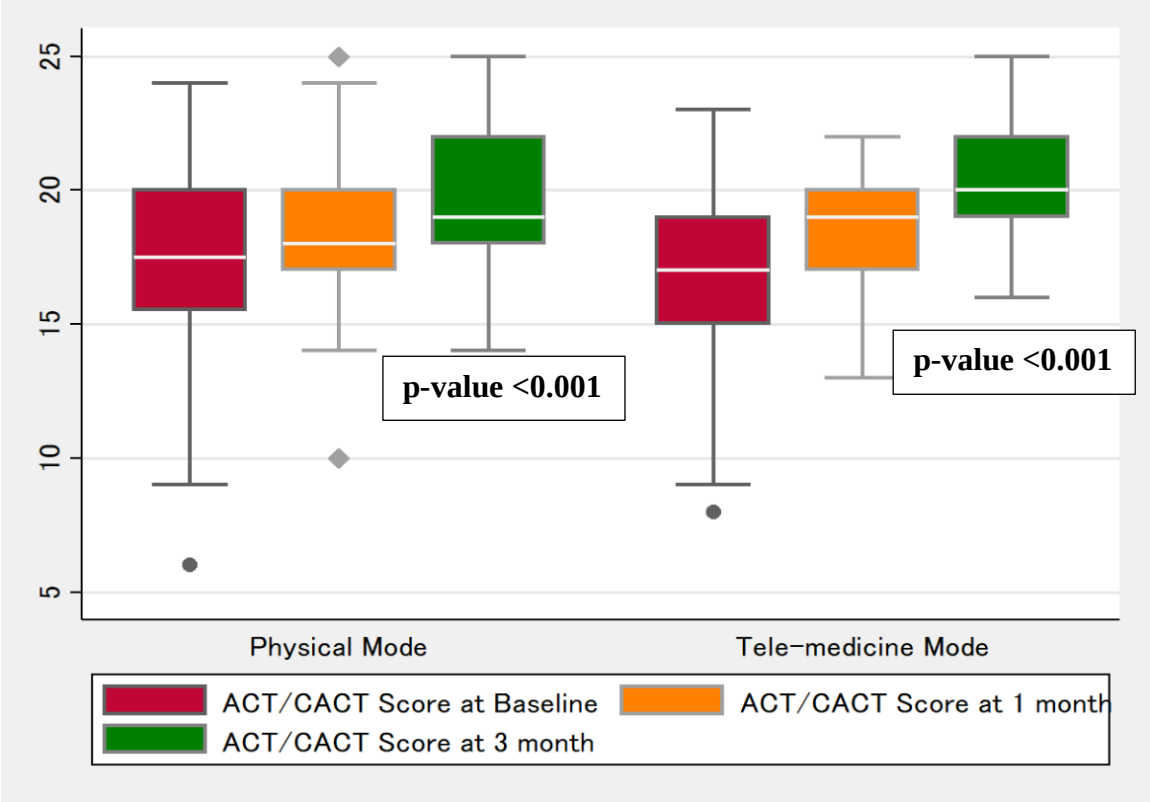
There was also a significant improvement in ACT[36]/C-ACT[37] scores from baseline to 3 months in both the groups individually, with a p-value <0.001. This is depicted in Figure 1.

The telemedicine satisfaction score has been depicted in detail in Table 5.

Table 5: Study outcomes for Telemedicine versus In-person visits

Parameter	**Telemedicine visits (n=96)**	**In-person visits (n=96)**	**Mean difference (95% CI)**	**P-value**
The primary outcome, *mean (S.D.)*				
- ACT/C-ACT score at 3 months	19.88 (2.71)	20.48 (2.12)	-0.35 (-1.30 to +0.10)	**0.09**
Secondary outcome				
1. GINA asthma control at 3 months, *n (%)*				
- Well-controlled	48 (38.4%)	77 (61.6%)	0.10 (-1.78	<0.001
- Partially controlled	40 (71.4%)	16 (28.6%)	to +1.989)	<0.001
- Uncontrolled	8 (72.7%)	3 (27.3%)		<0.001
2. PQLI at 3 months, *mean (SD)*	66.82 (7.99)	66.71 (4.66)		**0.91**
3. Number of patients with exacerbations, *n (%)*	4 (0.04%)	1 (0.01%)		**0.10**
4. Use of systemic steroids, *n (%)*	1 (0.01%)	0		
5. Emergency visits, *n (%)*	0	0		
6. Telemedicine Satisfaction Score at 3 months, *mean (SD)*	3.8 (0.7)	-		

Figure 2. Improvement in ACT/C-ACT scores from baseline to 3 months



7.5 Telemedicine Satisfaction Score: The telemedicine satisfaction score at the end of 3 months was assessed using the Telemedicine satisfaction questionnaire[40]. The mean value was 3.8 (3.8 ± 0.71 SD), which indicates that most patients were satisfied with the telemedicine follow-up.

Table 6. Telemedicine Satisfaction Score

Questions	1	2	3	4	5	Mean score
1. I can easily talk to my healthcare provider				22	74	4.77
2. I can hear my healthcare provider clearly		10	14	15	57	4.24
3. My healthcare provider can understand my healthcare condition		5	11	34	46	4.26
4. I can see my healthcare provider as if we met in person	32	25	20	9	10	2.37
5. I do not need assistance while using the system	25	33	16	10	12	2.49
6. I feel comfortable communicating with my healthcare provider	15	4	10	14	53	3.89
7. I think the healthcare provided via telemedicine is consistent	12	15	5	19	45	3.73
8. I obtain better access to healthcare services by use of telemedicine	2	8	14	29	43	4.01
9. Telemedicine saves me time traveling to a hospital or a specialist clinic	1	7	8	25	55	4.31
10. I do receive adequate attention	2	3	4	15	72	4.58
11. Telemedicine provides for my healthcare need	11	14	22	21	28	3.43
12. I meet with my healthcare provider more frequently via telemedicine	19	22	30	8	17	2.81
13. I find telemedicine an acceptable way to receive healthcare services	8	16	14	19	39	3.67
14. I will use telemedicine services again	5	9	17	23	42	3.92
15. Overall, I am satisfied with the quality of service being provided via telemedicine		2	9	11	74	4.63
Mean score (SD)						**3.8 (0.7)**

7.6 Non-inferiority analysis for the difference in ACT[36]/C-ACT[37] scores at one month and three months: The ACT[36]/C-ACT[37] scores were analyzed at one month and three months from baseline, and the difference between the two groups was not crossing the non-inferiority margin of 2.0. Hence, telemedicine visits were non-inferior to in-person visits. The findings are depicted in Table 6.

Table 7: Non-inferiority analysis for the difference in ACT/C-ACT scores

Score	Number in Telemedicine group	Number in physical group	Difference (Telemedicine-Physical) (95% CI)	Non-inferior
ACT/C-ACT (1 month-Initial)	96	96	-0.267 (-0.89 to 0.35)	**Yes**
ACT/C-ACT (3 months – Initial)	96	94	-0.35 (-1.30 to +0.10)	**Yes**

8. DISCUSSION

For this randomized controlled trial, we enrolled a total of 192 patients, with 96 children in each group of telemedicine and in-person follow-up. We found that there was a significant improvement in the mean ACT[36]/C-ACT[37] scores from baseline to 3 months in both groups, with no significant difference in the change of means scores among the two groups. There was a significant change in the mean PQLI scores[39] (quality of life) in both groups. There was an improvement in the GINA[38] asthma control level from baseline to 3 months in both groups, and the mean difference in GINA asthma control between the two groups was also significant ($p<0.001$). The mean telemedicine satisfaction questionnaire[40] score in our study was 3.8 ± 0.7, which indicates that most of the parents were satisfied with the telemedicine follow-up process.

In our study, the mean age of participants was 11.71 ± 3.0 years in the telemedicine group versus 11.5 ± 3.0 years in the in-person visits group, without any significant difference. Baseline variables like weight, height, and BMI score did not show any significant difference in both groups. Portnoy et al.[17] enrolled 169 children (100 in the in-person visit group, 69 in the telemedicine group), with the largest group belonging to the age group of 4 to 11 years old. Kumari et al.[25] enrolled 188 patients (181 telemedicine group, seven physical groups) with a mean age of 9.7 ± 4.9 years, ranging from 3 months to 18 years. Chan et al.[26] enrolled 120 patients (194 virtual groups, 199 office-based groups) with a mean age of 10.2 ± 3.1 years in the intervention group and 9.0 ± 3.0 years in the usual care group. Perry et al.[28] enrolled 96 subjects aged 5-12 years, with a median age of 9.6 years old.

In our study, among the enrolled participants, 69 patients (71.9%) of the telemedicine group and 68 patients (70.8%) were males, which had no significant difference. Kumari et al.[25] had enrolled 117 males (62.2%), and Portnoy et al.[17] had twice as many boys as girls. Chan et al.[26] enrolled 37 males (of 60) in the virtual group and 38 males (60) in the office-based group. Bergman et al.[29] had 54% of patients as males in their studies.

Our study showed exposure to smoke amongst 62 patients (71.9%) in the telemedicine group and 50 patients (52.1%) in the in-person visits group. In a study done by Perry et al.[28], 70 children had a history of exposure to smokers (30 in the usual care group and 40 in the intervention group).

Among children enrolled in our study, 88 patients (91.6%) in the telemedicine group and 83 patients (86.4%) in the in-person visits group had mothers having education status as illiterate or less than secondary level. Perry et al.[28] had 35% of children with maternal education a high school education or less. Bergman et al.[29] had 78% of children with maternal education of high school level or higher.

The baseline spirometry values were also compared in our study between patients belonging to both telemedicine and in-person visits group at baseline and had no significant difference. The mean FEV1 value in our study was 73.78 ± 17.77 in the telemedicine group and 73.63 ± 15.52 in the in-person visits group. In a study done by Chan et al.[26], mean FEV1 was 104.1 ± 19.9 in the virtual group and 96.8 ± 13.0 in the office-based group. Bergman et al.[29] showed a mean FEV1 value of 96.5 in their study. The mean FVC value in our study was 80.14 ± 17.68 in the telemedicine group and 79.51 ± 17.35 in the in-person visits group, whereas Chan et al.[26] showed a mean FVC value of 103.7 ± 17.4 in the virtual group and 104.5 ± 15.4 in the office-based group. The difference in FEV1 and FVC values in the index study may be due to the use of different normative data by other studies. The mean value of FEV1/FVC in our study was 91.66 ± 14.19 in the telemedicine group and 100.55 ± 64.02 in the in-person visits group, and similarly, the mean FEV1/FVC value in Bergman et al.[29] study was 94.5.

In our study, there was no significant difference in the mean ACT[36]/C-ACT[37] scores at baseline between both groups. The mean ACT[36]/C-ACT[37] score in the telemedicine group was 17.54 ± 3.31, and in the in-person visit group was 16.57 ± 3.17. This was similar to the findings of mean ACT/C-ACT adjusted scores of Portnoy et al.[17], with 16.1 ± 1.5 in the telemedicine group and 15.9 ± 1.6 in the in-person visit group.

There was also no significant difference in the GINA[38] asthma control at baseline between the groups in our study, with 39 (45.9%) children having uncontrolled asthma in the telemedicine group and 46 (54.1%) in the in-person visits group. In

comparison, Chan et al.[26] had 12 (0f 60) patients with uncontrolled asthma in the virtual group and 5 (0f 60) patients in the office-based group. Perry et al.[28] showed that only 22% of patients were well-controlled.

Considering the baseline asthma quality of life (PQLI scores[39]), there was no significant difference between the two groups, with a mean score of 57.2 ± 10.2 in the telemedicine group and 56.1 ± 11.7 in the in-person visits group.

Our study showed a significant improvement in the mean ACT[36]/C-ACT[37] scores from baseline to 3 months in both groups, with no significant difference in the change of means among the two groups. The mean ACT[36]/C-ACT[37] score at three months in the telemedicine group was 19.88 ± 2.71, and in the in-person visit group was 20.48 ± 2.12. This is similar to the finding of the study done by Portnoy et al.[17], where the mean adjusted Asthma score in the telemedicine group was 18.5 ± 1.6, and in the in-person visit group was 19.6 ± 1.4.

In our study, there was a significant change in the mean PQLI scores[39] (quality of life) from 57.2 ± 10.2 to 66.82 ± 7.99 in the telemedicine group and from 56.1 ± 11.7 to 66.71 ± 4.66 in in-person visits group. There was no significant difference in the mean values between both groups at baseline as well as at the end of 3 months. In the study done by Chan et al.[26], there was a statistically significant change in mean pediatric asthma quality of life score from 5.7 ± 1.1 to 6.4 ± 1.0 in the virtual group, and 5.5 ± 1.1 to 6.2 ± 0.8 in the in-person visits group

There was an improvement in the GINA[38] asthma control level from baseline to 3 months in both groups, although the difference between the groups was significant ($p<0.001$). There were 48 children (38.4%) with well-controlled asthma and 40 children (71.4%) with partially controlled asthma in the telemedicine group, whereas 77 children (61.6%) with well-controlled asthma and 16 children (28.6%) with partially controlled asthma in in-person visits group. There was a significant improvement in the GINA asthma control in-person group (66% vs 38.4%). GINA asthma control is used for the clinical assessment of asthmatic children. It has been advised to use validated scores like C-ACT/ACT, ACQ, etc. in research.

Our study showed an asthma exacerbation in 4 patients in the telemedicine group, and one patient in the in-person visits group, which had no significant difference between both groups. Of the telemedicine group, 1 out of 4 required oral

corticosteroids for management. None of the patients in both groups had exacerbations requiring emergency visits. This contrasts with the study by Chan et al.[26], where four patients in a virtual group and two patients in an in-person visits group required emergency visits, and one patient in each group required hospitalization for management.

The mean telemedicine satisfaction questionnaire[40] score in our study was 3.8 ± 0.7, which indicates that most of the parents were satisfied with the telemedicine follow-up process. In the study by Chan et al.[26], the satisfaction score was 4.0 ± 1.0 in the virtual group and 4.8 ± 0.2 in the office-based group. Portnoy et al.[17] showed that most patients agreed that they would recommend telemedicine, although there were a few who were uncertain of this. Kumari et al.[25] showed that a rating of 8 or more (of 10 points) was provided by 93 (78.1%) respondents for telemedicine services and a rating of 10 by 56 (47.1%); A total of 95 (78.5%) respondents wanted to continue with teleconsultation rather than in-person consultation. However, only 48 (40%) of them wanted to continue it after the COVID-19 pandemic was over. Bergman et al.[29] demonstrated both the feasibility and acceptance of a school-based asthma program that provided subspecialty access through a telemedicine link and that asthma specialists could use their time efficiently to reach many children.

9. STRENGTHS AND LIMITATIONS

9.1 The strengths of our study were:

- This is the first study from India, to the best of our knowledge, where the randomized control design was used to compare telemedicine and in-person visit.
- We also used validated scores for asthma control.

9.2 Limitations of our study were:

- Since the study duration was short and there was a limited period of follow-up therefore few secondary outcomes like asthma exacerbation may not be evident. Moreover, the study was not adequately powered to assess asthma exacerbation.
- We were not able to provide a portable spirometer or peak flow meter to any patient due to financial constraints; therefore, no assessment of lung function was done on follow-up.
- The findings of our study cannot be extrapolated to other age groups, including preschool children.

10. SUMMARY AND CONCLUSION

10.1 Title of the study: Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial

10.2 Background: Telemedicine has now become an increasingly popular method for patients to access medical care and is viewed as a cost-effective alternative to traditional healthcare visits. Unfortunately, there is a lack of Indian studies performed comparing the effectiveness of physical visits versus telemedicine in the management of asthma and assessing the reduction in exacerbations or hospital admissions with the management provided by telemedicine follow-up.

10.3 Objectives:

Primary Objective:

- To compare Childhood Asthma Control Test (C-ACT) score and Asthma Control Test (ACT) score in children with asthma at 3 months in Telemedicine and in-person visits.

Secondary Objectives:

- To compare the asthma control assessed by GINA
- To compare the number of asthma exacerbations requiring oral steroids in two groups
- To compare the number of asthma exacerbations requiring hospital emergency visits in two group
- To assess the patient's quality of life
- To determine the satisfaction of patients/parents with telemedicine

10.4 Methods: A total of 192 children aged 7-17 years having a diagnosis of asthma or the reason for hospital visits included asthma were enrolled in the study. They were allocated into telemedicine and in-person visits group after block randomization. Baseline characteristics were entered in pre-structured proformas, and asthma control using ACT/C-ACT score, GINA asthma control guidelines, and quality of life using

PQLI questionnaire were assessed at baseline, one month, and three months. The Telemedicine process involved the use of video calling from OPD to the patient. The video call was done using the Whatsapp video calling feature. All the calls to telemedicine visit group patients were performed by a single investigator. The patient was enquired regarding asthma control based on the above-mentioned scores. Telemedicine satisfaction was assessed at the end of 3 months in those followed up by telemedicine with the help of a questionnaire. The number of asthma exacerbations was compared in both groups.

10.5 Results: In this study, we enrolled a total of 192 patients, with 96 children in each group of telemedicine and in-person follow-up. The mean age of participants was 11.71 ± 3.0 years in the telemedicine group versus 11.5 ± 3.0 years in the in-person visits group, without any significant difference. Baseline variables like gender, weight, height, BMI score, smoke exposure, spirometry values, and asthma control also did not show any significant difference in both groups. There was a significant improvement in the mean ACT/C-ACT scores from baseline to 3 months in both groups, with no significant difference in the change of means among the two groups. The mean difference in ACT/C-ACT score at three months in the telemedicine group and in the in-person visit group was -0.35; 95% CI (-1.30 to +0.10) [p-value 0.09]. There was a significant change in the mean PQLI scores (quality of life) from 57.2 ± 10.2 to 66.82 ± 7.99 in the telemedicine group and from 56.1 ± 11.7 to 66.71 ± 4.66 in in-person visits group, however the mean difference in PQLI score in both the groups was not significant (p=0.91). There was an improvement in the GINA asthma control level from baseline to 3 months in both groups, and the mean difference between the groups was also significant (p<0.001). There was no significant difference in number of asthma exacerbation (4 vs. 1) between physical and in-person visit (p=0.10). The mean telemedicine satisfaction questionnaire score in our study was 3.8 ± 0.7, which indicates that most of the parents were satisfied with the telemedicine follow-up process.

10.6 Conclusion: Telemedicine is non-inferior to in-person visits for follow-up of children with asthma and can be used as an alternative to in-person visits for the management of asthma, especially in remote settings and pandemic situations. Telemedicine removes distance and travel as a barrier for both patients and healthcare professionals.

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APPENDIX-1

अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर
All India Institute of Medical Sciences, Jodhpur
संस्थागत नैतिकता समिति
Institutional Ethics Committee

No. AIIMS/IEC/2021/ 3555 **Date: 12/03/2021**

ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: **AIIMS/IEC/2021/3390**

Project title: **"Comparison of telemedicine versus In-person visit for control of asthma in children aged 7-17 years: A Randomised control trial"**

Nature of Project:	**Research Project Submitted for Expedited Review**
Submitted as:	**M.D. Dissertation**
Student Name:	**Dr. Kkomal C Suvarna**
Guide:	**Dr. Jagdish Prasad Goyal**
Co-Guide:	**Dr. Kuldeep Singh & Dr. Prawin Kumar**

Institutional Ethics Committee after thorough consideration accorded its approval on above project.

The investigator may therefore commence the research from the date of this certificate, using the reference number indicated above.

Please note that the AIIMS IEC must be informed immediately of:

- Any material change in the conditions or undertakings mentioned in the document.
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Investigator must report to the AIIMS IEC in the prescribed format, where applicable, bi-annually, and at the end of the project, in respect of ethical compliance.

AIIMS IEC retains the right to withdraw or amend this if:

- Any unethical principle or practices are revealed or suspected
- Relevant information has been withheld or misrepresented

AIIMS IEC shall have an access to any information or data at any time during the course or after completion of the project.

Please Note that this approval will be rectified whenever it is possible to hold a meeting in person of the Institutional Ethics Committee. It is possible that the PI may be asked to give more clarifications or the Institutional Ethics Committee may withhold the project. The Institutional Ethics Committee is adopting this procedure due to COVID-19 (Corona Virus) situation.

If the Institutional Ethics Committee does not get back to you, this means your project has been cleared by the IEC.

On behalf of Ethics Committee, I wish you success in your research.

Dr. Praveen Sharma
Member Secretary

Member secretary
Institutional Ethics Committee
AIIMS,Jodhpur

Basni Phase-2, Jodhpur, Rajasthan-342005; **Website:** www.aiimsjodhpur.edu.in; **Phone:** 0291-2740741 Extn. 3109
E-mail : ethicscommittee@aiimsjodhpur.edu.in; ethicscommitteeaiimsjdh@gmail.com

APPENDIX-2

PARTICIPANT INFORMED CONSENT FORM (PICF) (ENGLISH)

Protocol / Study number: _____

Participant identification number for this study: _____

Title of project: Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomised Controlled Trial

Name of Principal Investigator: Dr Kkomal C Suvarna, Tel No: 8078686676

The contents of the information sheet dated that was provided have been read carefully by me/explained in detail to me, in a language that I comprehend, and I have fully understood the contents. I confirm that I have had the opportunity to ask questions. The nature and purpose of the study and its potential risks/benefits and expected duration of the study and other relevant details of the study have been explained to me in detail. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal right being affected. I understand that the information collected about me from my participation in this research and sections of any of my medical notes may be looked at by responsible individuals from AIIMS, Jodhpur. I permit these individuals to have access to my records. I agree to take part in the above study.

---------- Date:

(Signature / Left Thumb Impression) Place:

Name of the Participant: _____

Son / Daughter / Spouse of: _____

Complete postal address: _____

This is to certify that the above consent has been obtained in my presence

_____

Signature of the Principal Investigator

Place:

Date:

1) Witness – 1

Name: ----------

Signature

Address:

2) Witness – 2

Name: ----------

Signature

Address:

परिशिष्ट – 3

आंशिक सूचित सहमति फार्म (PICF) (हिंदी)
प्रोटोकॉल / अध्ययन संख्या: _____
इस अध्ययन के लिए प्रतिभागी की पहचान संख्या: _____
परियोजना का शीर्षक: 7-17 वर्ष की आयु के बच्चों में अस्थमा के नियंत्रण के लिए टेलीमेडिसिन बनाम इन-पर्सन यात्रा की तुलना: एक यादृच्छिक नियंत्रित परीक्षण

प्रधान अन्वेषक का नाम: डॉ कोमल सी सुवर्णा,टेलीफोन नंबर: 8078686676

उपलब्ध कराई गई सूचना पत्र की सामग्री को मेरे द्वारा सावधानी पूर्वक पढ़ा गया है / मुझे विस्तार से समझाया गया है, जिस भाषा में मैं समझता हूं, और मैंने सामग्री को पूरी तरह से समझ लिया है। मैं पुष्टि करता हूं कि मुझे सवाल पूछने का अवसर मिला है। अध्ययन की प्रकृति और उद्देश्य और इसके संभावित जोखिम / लाभ औरअध्ययन की अपेक्षित अवधि, और अध्ययन के अन्य प्रासंगिक विवरण मुझे विस्तार से बताए गए हैं। मैं समझता हूं कि मेरी भागीदारी स्वैच्छिक हैऔर मैं बिना किसी कारण के, बिना किसी चिकित्सीय देखभाल या कानूनी अधिकार के प्रभावित हुए बिना किसी भी समय वापस लेने के लिए स्वतंत्र हूं। मैं समझता हूं कि इस शोध में मेरी भागीदारी से मेरे बारे में एकत्र की गई जानकारी और मेरे किसी भी मेडिकल नोट के वर्गों को एम्स, जोधपुर के जिम्मेदार व्यक्तियों द्वारा देखा जा सकता है। मैं इन व्यक्तियों को अपने रिकॉर्ड तक पहुंचने की अनुमति देता हूं। मैं उपरोक्त अध्ययन में भाग लेने के लिए सहमत हूं।

(हस्ताक्षर / बाएं अंगूठे का निशान) दिनांक: जगह:

प्रतिभागी का नाम: _____

पुत्र / पुत्री / पति / पत्नी: _____

पूरा डाकपता: _____

यह प्रमाणित करना है कि मेरी उपस्थिति में उपरोक्त सहमति प्राप्त हुई है|

प्रिंसिपल इन्वेस्टिगेटर के हस्ताक्षर दिनांक: जगह:

1) गवाह 2) गवाह – 2

नाम: नाम:

हस्ताक्षर --------- हस्ताक्षर ---------

पता: पता:

APPENDIX - 4

PARTICIPANT INFORMATION SHEET (PIS) (ENGLISH)

Title: **Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial**

Introduction: This statement describes the purpose, procedures, benefits, risks, and discomforts of the study and your right to withdraw from the study at any point in time.

Purpose: To compare Childhood Asthma Control Test (C-ACT) score and Asthma Control Test (ACT) score in children with asthma at 3 months in Telemedicine and in-person visits.

Study Procedure: You will be contacted on your mobile phone and explained the nature of the study. After taking informed consent through WhatsApp/Google document form for participating in the study, you will be allocated one of the two groups – Telemedicine or In-person visit. You will be contacted for visit 3 times – initial, 1 month, and 3 months, and baseline clinical details will be recorded, asthma control will be assessed by C-ACT/ACT scores, and GINA asthma control, technique, and compliance will be evaluated. Patients in the Telemedicine group will be contacted via video calling for each visit and will be given a 'Telemedicine Satisfaction 'Questionnaire' at the end of the study.

Benefits: No monetary benefits will be given to you. However, any new information that can come to light regarding any findings in the study will help in further management of the disease and help all other ailing patients suffering from this problem.

Confidentiality: Records of your study participation will be kept confidential and under safe custody. Any publication of data will not identify you by name. By signing the consent form you authorize the sharing of your study-related medical records with the regulatory authorities and the Institutional Ethical Committee.

Withdrawal information: You have the right to withdraw yourself from the study at any time during the study.

Contact for additional information: Any time during or after the study, you can obtain further information about the study from Dr. Kkomal C Suvarna, Phone no.-8078686676, All India Institute of Medical Science, Jodhpur, Rajasthan.

परिशिष्ट – 5

रोगी सूचना पत्र

शीर्षक: 7-17 वर्ष की आयु के बच्चों में अस्थमा के नियंत्रण के लिए टेलीमेडिसिन बनाम इन-पर्सन यात्रा की तुलना: एक यादृच्छिक नियंत्रित परीक्षण

परिचय: यह कथन अध्ययन के उद्देश्य, प्रक्रियाओं, लाभों, जोखिमों और असुविधाओं और किसी भी समय अध्ययन से पीछे हटने के आपके अधिकार का वर्णन करता है।

उद्देश्य: बचपन के अस्थमा नियंत्रण परीक्षण (सी-एसीटी) स्कोर और अस्थमा नियंत्रण परीक्षण (एसीटी) स्कोर की तुलना अस्थमा से पीड़ित बच्चों में 3 महीने के भीतर टेलीमेडिसिन और व्यक्ति के दौरे में की जाती है।

अध्ययन की प्रक्रिया: आपको मोबाइल फोन पर संपर्क किया जाएगा और अध्ययन की प्रकृति के बारे में समझाया जाएगा। अध्ययन में भाग लेने के लिए व्हाट्सएप / Google दस्तावेज़ फ़ॉर्म के माध्यम से सूचित सहमति लेने के बाद, आपको दो समूहों में से एक आवंटित किया जाएगा - टेलीमेडिसिन या इन-व्यक्ति यात्रा। आपको 3 बार - प्रारंभिक, 1 महीने और 3 महीने की यात्रा के लिए संपर्क किया जाएगा, और आधारभूत नैदानिक विवरण दर्ज किए जाएंगे, अस्थमा नियंत्रण का मूल्यांकन C-ACT / ACT स्कोर द्वारा किया जाएगा, और GINA अस्थमा नियंत्रण, तकनीक और अनुपालन का मूल्यांकन किया जाएगा। । टेलीमेडिसिन समूह के मरीजों को प्रत्येक यात्रा के लिए वीडियो कॉलिंग के माध्यम से संपर्क किया जाएगा, और अध्ययन के अंत में 'टेलीमेडिसिन संतुष्टि प्रश्नावली' दी जाएगी।

गोपनीयता: सुरक्षित अभिरक्षा के तहत, आपके अध्ययन की भागीदारी के रिकॉर्ड को गोपनीय रखा जाएगा। डेटा का कोई भी प्रकाशन आपको नाम से नहीं पहचानेगा। सहमति फॉर्म पर हस्ताक्षर करके आप अपने अध्ययन से संबंधित मेडिकल रिकॉर्ड को नियामक अधिकारियों और संस्थागत नैतिक समिति को साझा करने के लिए अधिकृत करते हैं।

वापसी के बारे में जानकारी: आपको अध्ययन के दौरान किसी भी समय अध्ययन से खुद को वापस लेने का अधिकार है।

अतिरिक्त जानकारी के लिए संपर्क करें: अध्ययन के दौरान या बाद में किसी भी समय, आप डॉ कोमल Ph.8078686676, अखिल भारतीय आयुर्विज्ञान संस्थान, जोधपुर, राजस्थान से अध्ययन के बारे में अधिक जानकारी प्राप्त कर सकते हैं।

APPENDIX - 6

SCREENING FORM

Date:

Screening number:

Name:

Father/' 'Mother's name:

UHID/CR Number:

Date of birth: or Approximate Age (years):

Children aged 7 to 17 years (Yes=1, No=2)

Children previously diagnosed with asthma, or hospital visits for Asthma (Yes=1, No=2)

Having a smartphone with good internet connectivity (Yes=1, No=2)

Diagnosis:

Exclusion criteria:

(1) Having >/= 1 asthma exacerbation per week

(2) History of exacerbation in the last week requiring hospital admission

(3) Comorbid conditions such as congenital heart disease or other chronic diseases

(4) Clinical features of vitamin D deficiency- rickets

Consent was taken: Yes=1, No=2

If not given, specify the reason:

Enrolled in the study: Yes=1 No=2

If not enrolled, specify the reason:

Unique identification number:

APPENDIX - 7

ENROLLMENT FORM

Comparison of Telemedicine versus In-Person visit for control of asthma in children aged 7-17 years: A Randomized Controlled Trial

Enrolment Form

Enrollment number	
UHID	
Date:	

STICKER

PURPOSE OF THE FORM: • This form is meant to be filled only if the patient satisfies all the criteria mentioned in the screening form		
Part A: Baseline characteristics of the patient		
S. No.	**Items**	**Response**
1.	Name	
2.	Date of birth (dd/mm/yy)	
3.	Age (completed years)	
4.	Gender	
5.	' 'Father's name	
6.	' 'Mother's education	Illiterate/ Primary/ Middle/ Secondary/ Higher Secondary/ Graduate/Postgraduate/ Professional
7.	' 'Mother's occupational status	Professional/ Semiprofessional/ Clerk/ Business/ Skilled/ Semiskilled/ Unskilled/ Unemployed
8.	' 'Father's education	Illiterate/ Primary/ Middle/ Secondary/ Higher Secondary/ Graduate/Postgraduate/ Professional
9.	' 'Father's occupation	Professional/ Semiprofessional/ Clerk/ Business/ Skilled/ Semiskilled/ Unskilled/ Unemployed
10.	Number of family members	
11..	Monthly income of the family	
12.	Address:	
	Pin code	
13.	Area of residence	

	(Residential=1/Factory=2/highway in 500m=3)		
14	Contact numbers	Mobile 1	
		Mobile 2	
Part B: History and Details of disease			
S. No.	**Items**		**Response (Yes/No)**
1.	History of cough? Duration?		
2.	History of breathlessness? Duration?		
3.	History of wheeze? Duration?		
4	History of chest tightness? Duration?		
5	History of nasal block/sneezing/nasal discharge? Duration?		
8	Association with fever?		
9.	Seasonal variation?		
10	**Medications**		
	Use of inhaled beta 2 agonists?		
	Use of inhaled steroids?		
	Use of systemic steroids?		
	Use of nebulization?		
	Use of IV medications		
	Use of cough syrup		
	Use of homeopathy/ayurvedic?		
13	Symptom frequency		
14	Missed school? If yes then frequency:		
15	History of smoke exposure?		
16	**ENVIRONMENTAL**		
	Rural/Urban		
	Cooking fuel used		
	Pets at home		
17	**TRIGGERS**		
	Exercise/Food/Infection/Pollens/ Mosquito coils/Drugs/Cockroaches/ House dust/Smoke		
18	The current step of Asthma treatment		
19	Current medications		

Examination		
Part C: Vitals and GPE		
1.	Pulse Rate	
2.	Respiratory Rate	

3.	SpO_2	
4.	Blood Pressure	
5.	Pallor/Icterus/Lymphadenopathy/Clubbing/Nasal polyp/Hypertrophies tonsil	
6.	Chest wall deformity	
7.	Auscultation	
Anthropometry		
1.	Height	
	IAP Z score	
2.	Weight	
	IAP Z score	
3.	BMI (kg/m^2)	
	IAP Z score	

Part D: Spirometry						
	Observed (pre)	**Observed (post)**	**Expected (pre)**	**Expected (post)**	**Percentage (pre)**	**Percentage (post)**
FEV_1						
FVC						
FEV_1/ FVC						
PEFR						

Part E:	
Any Asthma comorbidities?	

Part F: Scoring	
ACT/C-ACT score	
GINA Asthma Control Score (well controlled-1/ partially controlled – 2/ uncontrolled -3)	
Pediatric Asthma Life Quality Questionnaire (total score)	
The technique of use of MDI	
Compliance (Number of empty doses of MDI)	
Telemedicine Satisfaction Questionnaire score (only for the Telemedicine group) – total score	

Follow-up Date and Plan:_____

APPENDIX - 8

ASTHMA CONTROL TEST (ACT) – for children 12 years and above

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school, or at home? All of the time [1] Most of the time [2] Some of the time [3] A little of the time [4] None of the time [5] **Score:…….**

2. During the past 4 weeks, how often have you had shortness of breath? More than Once a day [1] Once a day [2] 3 to 6 times a week [3] Once or twice a week [4] Not at all [5] **Score:…….**

3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness, or pain) wake you up at night or earlier than usual in the morning? 4 or more nights a week [1] 2 to 3 nights a week [2] Once a week [3] Once or twice [4] Not at all [5] **Score:…….**

4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)? 3 or more times per day [1] 1 or 2 times per day [2] 2 or 3 times per week [3] Once a week or less [4] Not at all [5] **Score:…….**

5. How would you rate your asthma control during the past 4 weeks? Not Controlled at All [1] Poorly Controlled [2] Somewhat Controlled [3] Well Controlled [4] Completely Controlled [5] **Score:…….**

Total Score:…….

परिशिष्ट – 9

ए सी टी अंकपत्र

प्रश्न 1

पिछले 4 सप्ताहों में आपके दमा ने कार्य स्थल, स्कूल, कॉलेज अथवा घर पर आपको नियमित काम करने से कितने समय रोका?

हर समय (**1**) अधिकांश समय (**2**) कुछ समय **(3)** बहुत कम समय **(4)** किसी भी समय नहीं **(5)** **अंक:.....**

प्रश्न 2

पिछले 4 सप्ताहों के दौरान, कितनी बार आपकी सांस फूली?

दिन में एक बार से अधिक **(1)** दिन में एक बार **(2)** सप्ताह में 3 से 6 बार **(3)** सप्ताह में एक बार या दो बार **(4)** बिल्कुल भी नहीं **(5)**

अंक.....

प्रश्न 3

पिछले 4 सप्ताहों के दौरान कितनी बार आपके दमा लक्षणों (कठिनाई से सांस लेने पर आवाज़ का होना, खांसना, सांस फूलना, छाती में तनाव अथवा दर्द) ने आपको रात में अथवा सुबह सामान्य समय से पहले जगाया?
सप्ताह में 4 अथवा उससे अधिक रातों में **(1)** सप्ताह में 2 से 3 रातों में **(2)** सप्ताह में एक बार **(3)** एक या दो बार **(4)** बिल्कुल भी नहीं **(5)**
अंक:.....

प्रश्न 4

पिछले 4 सप्ताहों के दौरान आपने तुरंत राहत देने वाली अपनी इनहेलर या नेब्यूलाइजर औषधि (जैसे एस्थेलिन (Asthalin), वेंटोरलिन (Ventorlin), डुओलिन (Duolin), लेवोलिन (Levolin), या ब्युडिकार्ट (Budecort)) का कितनी बार उपयोग किया?
दिन में 3 अथवा अधिक बार **(1)** दिन में 1 अथवा 2 बार **(2)** सप्ताह में 2 अथवा 3 बार **(3)** सप्ताह में एक बार या उससे कम **(4)** बिल्कुल भी नहीं **(5)**
अंक:.....

प्रश्न 5

पिछले 4 सप्ताहों के दौरान, अपने दमा को काबू में लाने का आप किस तरह मूल्यांकन करेंगे?
बिल्कुल भी काबू में नहीं रहा **(1)** बहुत कम काबू में रहा **(2)** कुछ हद तक काबू में रहा **(3)** काफी काबू में रहा **(4)** पूर्णतः काबू में रहा **(5)**
अंक:.....

सम्पूर्ण अंक:.....

APPENDIX - 10

CHILDHOOD ASTHMA CONTROL TEST (C-ACT) – for children 7– 11 years

1. How is your asthma today?

   

Very bad (1) Bad (2) Good (3) Very good (4)

Score:……..

2. How much of a problem is your asthma when you run, exercise, or play sports?

 It's a big problem, I 'can't do what I want to do (1)

 It's a problem and I don't like it (2)

 It's a bit of a problem but it's okay (3)

 It's not a problem (4)

Score:……..

3. Does your asthma make you cough?

 Yes, all the time (1)

 Yes, most of the time (2)

 Yes, sometimes (3)

 No, never (4)

Score:……..

4. Does your asthma make you wake up during the night?

 Yes, all the time (1)

 Yes, most of the time (2)

 Yes, sometimes (3)

 No, never (4)

Score:……..

5. During the last 4 weeks, how many days did your child have any daytime asthma symptoms?
   None (1) 1 to 3 days (2) 4 to 10 days (3) 11 to 18 days (4) 19 to 24 days (5) Every day (6) **Score:……..**
6. During the last 4 weeks, how many days did your child wheeze during the day because of asthma?
   None (1) 1 to 3 days (2) 4 to 10 days (3) 11 to 18 days (4) 19 to 24 days (5) Every day (6) **Score:……..**
7. During the last 4 weeks, how many days did your child wake up during the night because of asthma?
   None (1) 1 to 3 days (2) 4 to 10 days (3) 11 to 18 days (4) 19 to 24 days (5) Every day (6) **Score:……..**

Total score:……..

परिशिष्ट – 11

सी - ए सी टी अंकपत्र

1. आज आपका दमा कैसा है?

   

बहुत खराब (1) खराब (2) ठीक(3) बहुत ठीक(4)

अंक:.....

2. जब आप दौड़ते हैं, व्यायाम करते हैं या खेल खेलते हैं तो आपका दमा कितनी बड़ी समस्या होती है?

 यह एक बड़ी समस्या है, मैं वह नहीं कर सकता/सकती जो मैं चाहता/चाहती हूं (1)

 यह एक समस्या है और मैं इसे पसंद नहीं करता/करती (2)

 यह एक छोटी सी समस्या है लेकिन ठीक है (3)

 यह कोई समस्या नहीं है (4) **अंक:.....**

3. क्या आपको आपके दमे के कारण खांसी आती है?

 हाँ, हर समय (1)

 हाँ, अधिकांश समय (2)

 हाँ, कुछ समय (3)

 नहीं, किसी भी समय नहीं (4) **अंक:.....**

4. क्या आप अपने दमे के कारण रात में जाग जाते हैं?

 हाँ, हर समय (1)

 हाँ, अधिकांश समय (2)

 हाँ, कुछ समय (3)

 नहीं, किसी भी समय नहीं (4) **अंक:.....**

5. पिछले 4 सप्ताहों के दौरान, कितने दिन आपके बच्चे को दमे के कोई भी लक्षण दिन के समय हुए?
   कभी भी नहीं(1) 1-3 दिन (2) 4-10 दिन (3) 11-18 दिन (4) 19-24 दिन (5) प्रतिदिन (6)
   अंक:.....

6. पिछले 4 सप्ताहों के दौरान, आपके बच्चे ने कितने दिन दमे के कारण दिन में घरघराहट के साथ सांस ली?
   कभी भी नहीं(1) 1-3 दिन (2) 4-10 दिन (3) 11-18 दिन (4) 19-24 दिन (5) प्रतिदिन (6)
   अंक:.....

7. पिछले 4 सप्ताहों के दौरान, कितने दिन आपका बच्चा रात के समय दमे के कारण जाग गया?
   कभी भी नहीं(1) 1-3 दिन (2) 4-10 दिन (3) 11-18 दिन (4) 19-24 दिन (5) प्रतिदिन (6)
   अंक:.....

सम्पूर्ण अंक:.....

APPENDIX - 12

Telemedicine Satisfaction Questionnaire

1. I can easily talk to my healthcare provider
2. I can hear my healthcare provider clearly
3. My healthcare provider can understand my healthcare condition
4. I can see my healthcare provider as if we met in person
5. I do not need assistance while using the system
6. I feel comfortable communicating with my healthcare provider
7. I think the healthcare provided via telemedicine is consistent
8. I obtain better access to healthcare services by use of telemedicine
9. Telemedicine saves me time traveling to a hospital or a specialist clinic
10. I do receive adequate attention
11. Telemedicine provides for my healthcare need
12. I meet with my healthcare provider more frequently via telemedicine
13. I find telemedicine an acceptable way to receive healthcare services
14. I will use telemedicine services again
15. Overall, I am satisfied with the quality of service being provided via telemedicine

परिशिष्ट – 13

टेलीमेडिसिन संतुष्टि प्रश्नावली

1. मैं आसानी से अपने स्वास्थ्य देखभाल प्रदाता से बात कर सकता हूं
2. मैं अपने स्वास्थ्य देखभाल प्रदाता को स्पष्ट रूप से सुन सकता हूं
3. मेरा स्वास्थ्य देखभाल प्रदाता मेरी स्वास्थ्य देखभाल स्थिति को समझने में सक्षम है
4. मैं अपने स्वास्थ्य देखभाल प्रदाता को देख सकता हूं जैसे कि हम व्यक्ति से मिले थे
5. मुझे सिस्टम का उपयोग करते समय सहायता की आवश्यकता नहीं है
6. मैं अपने स्वास्थ्य देखभाल प्रदाता के साथ सहज महसूस करता हूं
7. मुझे लगता है कि टेलीमेडिसिन के माध्यम से प्रदान की जाने वाली स्वास्थ्य देखभाल सुसंगत है
8. मैं टेलीमेडिसिन के उपयोग से स्वास्थ्य देखभाल सेवाओं तक बेहतर पहुंच प्राप्त करता हूं
9. टेलीमेडिसिन मुझे अस्पताल या विशेषज्ञ क्लिनिक की यात्रा करने में समय बचाता है
10. मुझे पर्याप्त ध्यान मिला
11. टेलीमेडिसिन मेरी स्वास्थ्य देखभाल की आवश्यकता के लिए प्रदान करता है
12. मैं अपने स्वास्थ्य देखभाल प्रदाता के साथ टेलीमेडिसिन के माध्यम से अधिक बार मिलता हूं
13. मुझे स्वास्थ्य देखभाल सेवाओं को प्राप्त करने के लिए टेलीमेडिसिन एक स्वीकार्य तरीका है
14. मैं फिर से टेलीमेडिसिन सेवाओं का उपयोग करूंगा
15. कुल मिलाकर, मैं टेलीमेडिसिन के माध्यम से प्रदान की जा रही सेवा की गुणवत्ता से संतुष्ट हूं

APPENDIX - 14

Mini Asthma Quality of Life Questionnaire

Please complete **all** the questions by circling the number that best describes how you have been during the **last 14 days as a result of your asthma.**

IN GENERAL, HOW MUCH OF THE TIME **DURING THE LAST 14 DAYS** DID YOU:

	All of the Time	Most ofthe Time	A Lot of the Time	Some of the Time	A Little ofthe Time	Hardly Any of the Time	None of the Time
Feel SHORT OF BREATH as a result of your asthma?	1	2	3	4	5	6	7
Feel bothered by or have to avoid DUST in the environment?	1	2	3	4	5	6	7
Feel FRUSTRATED as a result of your asthma?	1	2	3	4	5	6	7
Feel bothered by COUGHING?	1	2	3	4	5	6	7
Feel AFRAID OF NOT HAVING YOUR ASTHMA MEDICATION AVAILABLE?	1	2	3	4	5	6	7
Experience a feeling of CHEST TIGHTNESS and/or CHEST HEAVINESS?	1	2	3	4	5	6	7
Feel bothered by or have to avoid CIGARETTE SMOKE in the environment?	1	2	3	4	5	6	7
Have DIFFICULTY GETTING A GOOD NIGHT'S SLEEP as a result of your asthma?	1	2	3	4	5	6	7
Feel CONCERNED ABOUT HAVING ASTHMA?	1	2	3	4	5	6	7

IN GENERAL, HOW MUCH OF THE TIME **DURING THE LAST 14 DAYS** DID YOU:

	All of the Time	Most of the Time	A Lot of the Time	Some of the Time	A Little ofthe Time	Hardly Any of the Time	None of the Time
Experience WHEEZING in your chest?	1	2	3	4	5	6	7
Feel bothered by or have to avoid going outside because of WEATHER OR AIR POLLUTION?	1	2	3	4	5	6	7

HOW LIMITED HAVE YOU BEEN DURING **THE LAST 14 DAYS** DOING THESE ACTIVITIES **AS ARESULT OF YOUR ASTHMA**?

	Totally Limited	Extremely Limited	Very Limited	Moderate Limitation	Some Limitation	A Little Limitation	Not at all Limited
STRENUOUS ACTIVITIES (such as hurrying, exercising, running up stairs, and sports)	1	2	3	4	5	6	7
MODERATE ACTIVITIES (such as walking, housework, gardening, shopping, climbing stairs)	1	2	3	4	5	6	7
SOCIAL ACTIVITIES (such as talking, playing with pets/children, visiting friends/relatives)	1	2	3	4	5	6	7
WORK-RELATED ACTIVITIES (tasks you have to do at work*)	1	2	3	4	5	6	7

MASTER CHART

Enrollment number	mode	age	gen	foccup	fedu	moccup	medu	livingaccm	cough	coughdur	bd	bddur	wheeze	wheezedur	chestight	chestightdur	nasalblock	nasalblockdur	fever	seasvar	salbut	ics
KK1	0	12	0	3	2	3	5	1	1	0.2	1	0.2	1	0.2	1	0	1	2	1	0	0	0
KK10	1	11	0	3	3	5	3	1	1	7	1	7	1	7	1	7	1	7	1	1	1	1
KK100	1	7	0	2	4	2	5	3	1	5	1	5	1	5	1	3	1	5	0	1	0	0
KK101	1	7	1	1	2	5	2	1	1	5	0	5	1	5	0		1	4	0	1	0	0
KK102	0	12	1	2	3	3	4	1	1	3	1	3	0		1	3	0		0	1	1	1
KK103	1	11	1	1	2	5	3	3	1	2	1	2	1	2	1	2	1	2	0	1	1	1
KK104	0	11	0	2	4	3	5	1	1	3	1	3	1	3	1	3	0		0	1	0	0
KK105	0	7	0	2	3	5	3	3	1	6	1	6	1	6	1	6	1	6	0	1	1	1
KK106	1	17	0	3	4	5	4	1	1	10	1	10	1	10	1	10	1	10	0	1	1	1
KK107	0	7	0	2	2	5	4	3	1	4	1	4	1	4	1	4	0		1	1	1	1
KK108	1	7	1	4	4	3	5	1	1	5	1	5	1	5	0		0		1	1	0	0
KK109	1	12	0	2	3	3	5	1	1	4	1	4	1	4	1	4	0		0	1	0	1
KK11	1	15	1	2	4	2	4	3	1	1	1	1	1	1	1	1	1	1	0	1	1	1
KK110	1	13	0	2	4	5	5	2	1	2	1	2	0		0		0		0	1	1	1
KK111	0	12	0	1	2	3	5	3	1	10	1	10	1	10	1	10	1	10	0	1	1	1
KK112	1	11	0	2	3	5	4	2	1	0.5	1	0.5	0		0		1	5	1	1	1	1
KK113	1	8	0	2	4	3	4	1	1	2	0		0		1	2	1	2	0	1	1	1
KK114	0	13	1	1	2	5	3	3	1	10	1	10	1	10	1	10	0	10	0	1	1	1
KK115	1	10	0	2	3	3	4	1	1	5	1	5	1	5	0		0		0	1	0	0
KK116	1	13	1	2	4	5	5	1	1	6	1	6	1	6	1	6	0		0	1	1	1
KK117	1	13	0	2	4	3	4	3	1	5	1	5	1	5	1	5	1	5	0	1	1	1
KK118	1	12	0	2	3	5	4	1	1	10	1	10	1	10	1	10	1	10	0	1	1	1
KK119	1	7	0	2	3	5	4	1	0		1	5	0		0		0		0	1	0	0
KK12	1	13	0	3	4	3	5	3	1	9	1	9	1	9	1	9	1	9	1	1	1	1
KK120	1	17	0	4	3	5	4	3	1	4	1	4	1	4	1	4	1	4	0	1	1	1
KK121	1	14	0	2	4	3	4	2	1	1	1	1	0		0		0		0	1	0	0
KK122	1	15	0	2	3	3	4	3	1	10	1	10	1	10	1	10	0		0	1	1	1
KK123	1	12	1	2	4	5	5	3	1	5	1	5	1	5	1	5	0		0	1	1	1
KK124	0	7	0	2	3	5	4	1	1	6	1	6	1	6	1	2	1	4	0	1	1	1
KK125	1	10	0	4	3	5	4	1	1	1.5	1	1.5	1	1.5	1	2	1	15	0	1	1	1
KK126	0	13	1	2	4	5	4	2	0		1	5	1	5	1	5	0		1	0	0	0
KK127	1	12	0	4	3	5	4	1	1	1.5	1	1.5	1	1.5	1	2	0		0	1	1	1
KK128	1	7	0	2	4	5	5	1	1	5	1	5	1	5	1	5	1	5	1	1	0	0
KK129	1	8	1	4	2	5	3	2	1	0.6	1	0.7	1	0.7	1	1	1	7	0	1	1	1
KK13	1	15	0	3	3	3	5	1	1	6	1	6	1	6	1	6	1	6	1	1	1	1
KK130	1	10	0	2	4	3	5	3	1	2.5	1	2.5	1	2.5	1	3	1	25	0	1	0	0
KK131	1	17	1	2	3	5	4	1	1	2	1	2	1	2	1	2	0		0	1	0	0
KK132	1	7	1	2	3	5	4	3	1	3	1	3	1	3	1	3	1	3	1	1	0	0
KK133	1	8	0	2	3	3	4	1	1	4	1	4	1	4	1	4	1	4	0	1	1	1
KK134	1	7	0	2	5	3	5	1	1	4	1	4	1	4	0		1	4	0	1	0	0
KK135	1	10	0	4	3	5	4	3	1	0.9	1	0.1	1	0.9	1	1	0		0	1	0	0
KK136	0	14	0	3	4	5	5	2	1	2	1	2	1	2	0		0		0	1	1	1
KK137	0	7	1	2	4	3	4	3	1	4	1	4	1	4	1	4	0		1	1	1	1
KK138	1	15	0	1	2	5	3	3	1	1	1	1	0		1	1	0		1	1	1	1
KK139	0	14	1	2	3	5	4	1	0		1	10	1	10	1	10	0		0	1	1	1
KK14	1	7	0	3	2	5	4	1	1	3	1	2	1	2	1	2	1	2	1	1	1	1
KK140	1	10	0	2	5	3	5	1	1	1.5	1	1.5	1	1.5	1	2	0		0	1	1	1
KK141	0	12	0	2	4	3	5	3	1	8	1	8	1	8	1	8	0		0	1	0	0
KK142	1	11	0	2	4	5	4	2	1	7	1	7	1	7	1	5	0		0	1	1	1
KK143	1	11	0	1	2	5	4	1	1	4	1	4	1	4	1	4	1	4	0	1	1	1
KK144	1	16	0	2	3	5	4	3	1	3	1	3	1	3	1	3	0		0	1	1	1
KK145	1	7	0	1	2	5	3	3	1	2	1	2	1	2	0		1	2	0	1	0	0
KK146	0	8	0	4	3	5	4	1	1	5	1	5	1	5	1	5	0		0	1	1	1
KK147	1	13	0	1	2	5	3	1	1	0.3	1	0.3	1	0.3	1	0	0		0	1	0	0
KK148	0	16	0	2	4	3	5	1	1	2	1	2	1	2	1	2	0		0	1	1	1
KK149	0	10	1	1	2	5	4	1	1	5	1	5	1	5	1	5	0		0	1	0	0
KK15	1	14	1	2	1	2	1	1	1	0.1	0		1	5	1	5	1	5	0	1	1	1
KK150	1	8	1	1	2	5	3	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
KK151	1	17	1	2	3	3	4	1	1	1	1	1	1	1	1	1	0		0	1	0	0
KK152	1	10	0	1	2	5	3	1	1	4	1	4	1	4	0		0		0	1	0	0
KK153	1	15	1	2	4	3	5	3	1	0.5	1	0.5	1	0.5	1	1	0		0	0	1	1
KK154	1	8	0	4	3	5	4	3	1	0.1	0		0		0		1	2	0	0	0	0
KK155	0	17	1	4	4	5	5	3	1	3	1	3	1	3	1	3	0		0	1	1	0
KK156	1	15	1	2	4	3	4	1	1	11	1	11	1	11	1	11	1	11	0	1	1	1
KK157	1	7	0	1	2	5	4	1	1	0.1	0		0		0		0		0	0	0	0
KK158	1	10	1	2	4	5	5	3	1	3	1	3	1	3	0		0		0	1	1	1
KK159	1	8	1	1	2	5	3	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0
KK16	1	10	1	2	3	3	4	1	1	1	1	1	1	1	1	0	1	3	1	1	1	1
KK160	0	15	0	1	2	5	4	1	1	0.2	1	0.2	0		1	0	0		0	1	1	1
KK161	1	11	1	2	3	5	5	2	0		1	5	0		0		1	5	0	1	1	1

Enrollment number	syssteroid	neb	IV	coughsyp	homeopathic	freq	schoolmissed	smoke	residence	cooking	pet	Current step of asthma treatment (step 1-1, step 2-2, step 3-3)	Current medications	hr	rr	spo2	pallor	adenoid	wheezeausc	ht	wt	bmi	fev1	fvc	fev1fvc	pefr
KK1	0	0	0	0	0	2	1	1	0	0	1	2	1	86	22	1	0	1	1	137	30.2	16.1	62	71	89	1.7
KK10	0	1	1	1	0	1	1	1	0	1	1	3	2	96	24	1	0	0	0	143	27.9	13.6	62	65	95	2.2
KK100	0	1	0	1	1	3	1	1	0	0	1	3	3	121	28	1	1	1	1	120	20.4	14.2	69	77	89	2.1
KK101	0	1	0	1	0	4	1	1	0	0	1	3	2	112	26	1	0	1	0	112	18.5	15	79	86	91	2.4
KK102	0	1	0	1	1	1	0	1	0	0	1	3	3	98	24	1	1	0	0	155	37.3	15.5	82	92	102	4.8
KK103	0	1	1	1	0	4	1	1	1	1	0	3	3	96	27	1	0	1	1	142	29	14.4	71	82	92	3.5
KK104	0	1	0	1	1	2	0	1	0	0	1	3	1	86	25	1	0	0	0	141	28.7	14.4	64	66	97	3.6
KK105	0	1	0	1	1	3	1	1	0	0	1	3	2	78	24	1	0	1	0	141	28.4	14.3	72	89	97	3.2
KK106	0	1	0	1	0	4	0	1	0	0	1	2	1	68	22	1	0	0	0	164	50	18.6	78	89	106	4.6
KK107	0	1	0	1	0	3	1	1	1	1	0	3	3	114	28	1	0	0	0	121	31.5	21.5	73	68	106	1.8
KK108	0	1	0	1	1	3	1	1	0	0	1	3	2	105	26	1	1	0	0	119	18.8	13.3	105	94	89	2.2
KK109	1	1	0	1	0	3	0	1	0	0	1	3	1	87	24	1	0	0	0	149	33	14.9	100	105	96	3.3
KK11	0	1	0	1	0	3	0	1	1	1	0	3	3	86	24	1	0	0	0	157	44	18.1	84	88	95	4.5
KK110	0	1	0	1	1	2	0	1	0	0	1	3	2	89	26	1	0	0	0	170	54.7	18.3	82	97	108	4.6
KK111	0	1	0	1	0	4	1	1	1	1	0	3	3	102	26	1	0	1	0	139	26	13.5	68	71	97	3.3
KK112	0	1	0	1	1	2	1	1	1	0	1	3	2	108	27	1	0	0	0	135	27.8	15.3	61	62	99	2.9
KK113	0	0	0	1	0	3	1	1	0	0	1	3	1	124	28	1	1	0	0	133	30	17.2	93	91	101	3.2
KK114	0	1	0	1	1	2	0	1	0	0	1	3	3	89	25	1	1	1	0	161	45.6	20.3	59	61	97	4
KK115	0	1	0	1	0	1	0	1	0	0	1	3	2	106	26	1	0	0	0	136	33	17.8	70	77	90	2.6
KK116	0	1	1	1	0	3	1	1	0	0	1	3	2	95	26	1	1	0	0	141	27	13.6	75	87	98	3.4
KK117	0	1	0	1	1	4	0	1	0	0	1	3	3	102	26	1	0	1	0	144	32	15.4	97	94	103	5.3
KK118	0	1	0	0	0	3	0	1	0	0	1	3	1	87	26	1	0	1	1	153	32.5	13.9	42	23	54	0.6
KK119	0	0	0	0	0	1	0	1	0	0	1	3	2	104	26	1	0	0	1	120	21.2	14.7	92	83	111	2.8
KK12	1	1	0	0	0	2	1	1	0	0	1	3	2	98	26	1	0	1	0	149	51.2	23.2	68	81	83	2.3
KK120	0	1	0	1	0	2	1	1	0	0	1	3	3	86	22	1	0	1	0	168	45	15.9	82	86	95	6.6
KK121	0	1	0	1	0	2	0	1	0	0	1	3	3	92	25	1	0	0	1	155	35	14.6	59	64	91	4.4
KK122	0	1	0	0	0	4	0	1	0	0	1	3	2	86	24	1	0	0	0	171	53.2	18.2	97	96	101	8.3
KK123	0	1	0	0	0	4	1	0	1	1	0	1	2	97	24	1	1	0	1	160	39.4	15.4	53	69	77	2.3
KK124	0	1	0	0	0	3	1	1	1	1	0	3	1	118	25	1	0	1	1	117	17.9	13.1	67	78	84	2.6
KK125	0	1	0	1	1	3	1	1	0	0	1	3	3	88	25	1	0	0	1	133	21	11.9	69	77	90	2.3
KK126	0	0	0	1	1	2	0	1	0	0	1	3	2	98	25	1	1	0	0	155	37.3	15.5	82	77	106	4
KK127	0	1	0	1	0	4	0	1	0	1	0	3	1	104	24	1	0	0	0	140	28.2	14.4	62	95	65	1.7
KK128	0	1	0	1	0	1	1	0	1	1	0	3	1	118	26	1	1	1	1	134	21	11.7	45	41	108	1.5
KK129	0	1	0	1	0	2	0	1	1	1	0	3	2	116	25	1	0	1	1	129	19.8	12.1	41	56	73	1.4
KK13	1	1	0	1	1	2	1	1	0	0	1	3	2	79	22	1	0	1	0	170	52	18.2	89	85	104	6.6
KK130	0	1	0	1	0	3	1	1	0	0	1	3	3	102	25	1	0	0	0	143	29.5	14.6	81	93	87	3.4
KK131	0	1	0	1	1	2	0	1	1	1	0	3	1	78	22	1	0	0	0	159	34.3	13.7	37	58	63	3.1
KK132	0	1	0	1	0	3	1	0	1	1	0	3	2	104	25	1	1	0	1	144	19.8	9.52	78	89	112	2.9
KK133	0	1	0	0	0	4	0	1	0	0	1	3	3	112	25	1	0	0	0	125	21.6	13.8	74	66	111	2.7
KK134	0	1	0	1	1	1	1	1	0	0	1	3	2	98	26	1	0	1	1	120	18.2	12.6	61	55	110	1.8
KK135	0	0	0	1	0	3	0	1	0	0	1	3	1	88	25	1	0	0	1	126	20.4	12.8	62	56	111	2.2
KK136	0	1	0	1	0	1	1	1	0	0	1	3	2	98	24	1	0	0	1	148	35.3	16.1	65	84	78	3
KK137	0	1	1	1	0	2	0	0	1	1	0	2	3	102	25	1	0	0	0	129	19.7	11.8	86	79	708	2.7
KK138	0	1	0	1	0	3	0	0	1	1	0	3	3	86	24	1	0	1	0	188	92	26.3	111	115	96	9.1
KK139	0	1	0	0	0	2	0	1	0	0	1	3	1	88	24	1	1	0	0	150	42	18.7	89	92	117	3.7
KK14	0	1	0	1	0	3	1	1	0	0	1	3	1	102	26	1	0	0	0	130	22.5	13.4	94	93	100	3.1
KK140	0	1	0	0	0	3	1	1	0	0	1	3	2	92	25	1	0	1	0	134	28.4	15.8	81	91	89	3.5
KK141	0	1	0	1	0	1	1	1	0	0	1	3	3	92	24	1	0	1	1	155	35	14.6	54	74	73	2.4
KK142	0	1	0	1	0	3	1	1	0	0	1	3	2	92	26	1	1	0	0	136	24	13	68	88	78	1.8
KK143	0	1	0	1	0	3	1	1	0	0	1	3	1	104	26	1	0	1	1	140	28	14.3	55	53	103	2.2
KK144	0	1	0	1	1	4	1	1	0	0	1	3	3	100	25	1	1	0	0	155	37.2	15.5	41	41	101	1.8
KK145	0	1	0	1	0	3	1	1	1	1	0	3	1	112	26	1	0	0	1	135	27	14.8	68	76	89	2.4
KK146	0	1	0	1	0	4	1	1	0	0	1	3	2	112	26	1	0	0	1	126	21.5	13.5	78	92	104	2.1
KK147	0	1	0	1	0	2	1	1	0	0	1	3	3	89	25	1	0	0	1	164	46	17.1	83	95	87	5
KK148	0	1	0	0	0	2	1	1	0	0	1	3	2	84	24	1	0	0	0	163	50	18.8	80	88	92	5.7
KK149	0	1	0	1	1	1	1	1	0	0	1	3	1	91	25	1	1	0	1	145	29	13.8	59	65	91	1.4
KK15	0	1	0	1	1	4	1	1	0	0	1	1	4	86	20	1	0	0	0	173	63.6	21.4	98	111	87	8.6
KK150	0	1	0	0	0	4	0	0	1	1	0	3	2	114	26	1	0	1	0	138	32	17	108	99	108	3.5
KK151	0	0	0	1	0	3	0	1	0	0	1	3	1	82	22	1	1	1	1	172	48	16.2	99	91	108	5.3
KK152	0	1	0	1	0	1	0	1	0	0	1	3	2	95	26	1	0	1	1	134	25	13.9	74	91	81	2.3
KK153	0	1	0	1	0	4	0	1	0	0	1	3	3	78	22	1	0	1	0	158	44	17.6	115	105	109	6.8
KK154	0	0	0	1	0	2	0	0	1	1	0	3	2	116	26	1	0	1	0	134	24	13.4	30	39	76	2.3
KK155	0	1	0	1	0	1	1	0	1	1	0	3	1	78	22	1	0	0	1	150	44	19.6	86	90	95	5
KK156	1	1	0	1	1	3	1	1	0	0	1	3	2	84	25	1	1	1	1	153	34.2	14.6	58	57	101	2
KK157	0	1	0	1	1	3	0	1	0	0	1	3	1	118	27	1	0	0	1	121	20.6	14.1	93	92	101	2.7
KK158	0	1	0	1	0	4	1	0	1	1	0	3	1	98	25	1	0	0	0	132	21.2	12.2	86	79	108	2.7
KK159	0	1	0	0	0	2	0	0	1	1	1	3	2	118	26	1	0	0	1	133	24	13.6	78	82	104	2.6
KK16	0	1	0	1	0	3	1	1	0	0	1	3	1	89	24	1	1	0	1	167	50.1	17.9	56	51	109	2.9
KK160	0	1	0	1	0	3	1	0	1	1	1	3	2	97	25	1	0	1	0	174	51.8	17.1	95	84	113	6.5
KK161	0	1	0	0	0	4	1	0	1	1	1	3	1	97	25	1	1	1	0	150	28.6	12.7	61	63	96	3

Enrollment number	comorbid	act	cact	act/cact	gina	pql	techq	comp	satisfaction	act1	cact1	act/cact1	gina1	tech1	compl1	pql1	act3	cact3	act/cact3	gina3	techq3	comp3	pql3
KK1	0	15		15	2	37	1	1		21		21	1	1	1	59	18		18	2	1	1	64
KK10	0		14	14	2	58	1	1	11		18	18	1	1	1	69		23	23	1	1	1	68
KK100	1		17	17	2	56	1	1	10		17	17	2	0	0	60		18	18	2	0	0	58
KK101	1		23	23	1	69	1	1	8		21	21	2	1	0	58		16	16	2	0	0	61
KK102	0	22		22	1	55	1	1		20		20	1	1	1	64	19		19	2	1	1	58
KK103	1		19	19	2	51	0	0	11		18	18	2	1	0	56		19	19	1	1	1	65
KK104	0		18	18	2	61	1	1			22	22	1	1	1	65		24	24	1	1	1	64
KK105	1		14	14	2	47	0	0			18	18	2	1	1	56		21	21	1	1	1	61
KK106	0	14		14	2	58	1	0	13	18		18	1	1	1	62	22		22	1	1	1	66
KK107	0		14	14	2	56	0	0			17	17	2	0	1	58		22	22	1	1	1	62
KK108	0		17	17	2	63	0	0	9		18	18	2	0	0	56		19	19	2	1	0	57
KK109	0	17		17	1	72	1	1	12	16		16	1	1	1	69	22		22	1	1	1	71
KK11	0	19		19	2	69	1	1	10	24		24	1	1	1	75	21		21	1	1	1	65
KK110	0	22		22	1	71	1	1	13	19		19	1	1	1	69	22		22	1	1	1	72
KK111	1	21		21	2	63	1	0		22		22	1	1	1	71	19		19	2	1	0	61
KK112	0		19	19	2	64	0	0	9		24	24	1	1	1	65		19	19	2	1	0	56
KK113	0		21	21	1	71	1	1	9		21	21	2	1	0	64		23	23	1	1	1	68
KK114	1	17		17	1	68	1	1		19		19	1	1	1	65	21		21	1	1	1	71
KK115	0		18	18	2	61	1	1	9		19	19	2	1	0	58		21	21	1	1	1	64
KK116	0	17		17	2	58	0	1	7	15		15	2	0	0	59	19		19	2	1	1	68
KK117	1	20		20	1	68	1	1	13	17		17	2	1	0	56	20		20	1	1	1	71
KK118	1	9		9	2	53	1	1	10	15		15	2	1	1	62	18		18	2	1	1	64
KK119	0	18		18	2	62	1	1	11	19		19	2	1	0	64	20		20	1	1	1	69
KK12	1	20		20	2	58	1	1	6	18		18	2	0	1	57			18	2	0	0	
KK120	1	13		13	2	35	1	1	9	10		10	2	1	0	37	23		23	2	1	1	81
KK121	0		17	17	2	59	1	1	9		19	19	2	0	1	61		19	19	2	1	1	62
KK122	0	24		24	1	72	1	1	12	22		22	1	1	1	69	24		24	1	1	1	71
KK123	0	17		17	2	65	1	1	11	19		19	1	1	1	67	17		17	2	1	0	61
KK124	1		17	17	2	56	1	0			19	19	2	1	1	62		25	25	1	1	1	68
KK125	0		14	14	2	56	0	1	9		18	18	2	1	1	61		19	19	2	1	0	58
KK126	0	9		9	2	56	1	1		16		16	2	0	1	62	19		19	1	1	1	64
KK127	0	16		16	2	63	1	1	10	18		18	1	1	1	68	15		15	2	1	0	54
KK128	1		18	18	2	54	0	0	11		16	16	2	1	0	57		21	21	2	1	1	61
KK129	1		16	16	2	44	0	0	11		18	18	2	0	1	58		19	19	2	1	1	66
KK13	1		14	14	2	65	1	1	8		18	18	2	0	0	66		24	24	1	1	1	77
KK130	0		20	20	2	64	1	1	13		19	19	1	1	1	69		25	25	1	1	1	71
KK131	0	12		12	2	44	1	1	10	16		16	2	0	1	53	16		16	2	1	0	61
KK132	0		21	21	2	53	1	1	8		19	19	2	0	1	65		14	14	2	0	0	51
KK133	0		20	20	2	53	0	0	9		15	15	2	0	0	47		19	19	2	1	1	68
KK134	1		16	16	2	53	1	1	12		25	25	1	1	1	71		19	19	1	1	1	69
KK135	0		21	21	2	60	0	1	9		20	20	2	1	1	58		22	22	2	1	0	61
KK136	0	12		9	2	50	0	0		14		14	2	0	0	54	18		18	2	1	1	64
KK137	0		19	19	1	71	1	1			21	21	2	1	1	64		19	19	1	1	1	71
KK138	1	17		17	2	62	1	0	10	19		19	1	1	1	64	21		21	1	1	1	68
KK139	0	18		18	1	66	1	1		19		19	1	1	1	68	21		21	1	1	1	71
KK14	0		16	16	2	26	1	1	7		20	20	2	1	1	71		22	22	1	1	1	80
KK140	1		21	21	1	71	1	1	8		19	19	1	0	1	69		16	16	2	1	0	65
KK141	1	10		10	2	52	1	1		16		16	2	0	1	61	19		19	1	1	1	67
KK142	0		19	19	1	73	1	1	13		20	20	2	1	0	65		24	24	1	1	1	69
KK143	1		21	21	2	61	0	0	8		15	15	2	1	0	58		20	20	1	1	1	68
KK144	0	21		21	1	67	1	1	10	19		19	1	1	0	69	20		20	1	1	1	68
KK145	0		18	18	2	57	1	1	11		21	21	2	0	0	61		19	19	2	1	0	52
KK146	0		19	19	2	52	0	0			19	19	1	0	1	68		23	23	1	1	1	69
KK147	0	13		13	2	61	0	1	9	21		21	1	1	1	68	22		22	1	1	1	68
KK148	0	18		18	2	61	0	0		20		20	1	1	1	65	22		22	1	1	1	68
KK149	0		16	16	2	61	1	1			20	20	2	0	1	65		20	20	1	1	1	69
KK15	0	21		21	1	43	1	1	10	25		25	1	1	1	93	25		25	1	1	1	92
KK150	1		19	19	1	63	1	1	11		15	15	2	1	0	51		18	18	2	1	0	58
KK151	1	14		14	2	48	1	1	8	17		17	2	0	0	55	18		18	2	1	0	61
KK152	1		15	15	2	52	1	1	13		20	20	2	1	1	57		17	17	2	1	1	70
KK153	1	21		21	1	65	1	1	13	19		19	1	1	1	64	21		21	1	1	1	72
KK154	1		15	15	2	49	1	1	10		18	18	2	0	1	56		18	18	2	0	0	62
KK155	0	16		16	2	48	1	1		21		21	1	1	1	68	22		22	1	1	1	66
KK156	1	14		14	2	51	1	1	8	17		17	2	0	0	58	18		18	2	1	0	61
KK157	0		19	19	2	53	1	1	9		16	16	2	0	0	52		18	18	2	1	0	64
KK158	0		20	20	2	58	0	1	9		17	17	2	1	1	61		18	18	2	1	0	59
KK159	0		17	17	2	55	1	1	7		15	15	2	0	0	51		17	17	2	1	1	58
KK16	0		12	12	2	54	1	1	9		15	15	2	1	1	57		19	19	1	1	1	82
KK160	1	13		13	2	60	0	1		17		17	2	1	1	64	18		18	1	1	1	66
KK161	1		18	18	2	65	1	1	11		18	18	2	1	1	57		15	15	2	1	0	51

MASTER CHART

Enrollment number	mode	age	gen	foccup	fedu	moccup	medu	livingaccm	cough	coughdur	bd	bddur	wheeze	wheezedur	chestight	chestightdur	nasalblock	nasalblockdur	fever
KK162	0	12	0	3	4	5	4	1	1	5	1	5	1	5	1	5	1	5	0
KK163	0	13	0	2	5	5	5	1	1	10	1	10	1	10	1	10	1	10	0
KK164	1	13	0	2	4	5	4	2	1	8	1	8	0	8	1	8	1	8	0
KK165	1	11	1	2	4	5	5	3	1	3	1	3	1	3	1	3	1	3	0
KK166	0	12	1	2	4	3	4	1	1	2	1	2	1	2	1	2	1	2	0
KK167	1	12	0	4	4	5	5	2	1	0.3	1	0.3	1	0.3	1	0	0		0
KK168	0	12	0	1	2	5	3	1	1	6	1	6	1	6	1	6	0		0
KK169	1	16	1	1	2	5	4	1	1	3	1	3	1	3	1	3	0		0
KK17	1	10	0	2	5	5	5	2	1	6	1	6	1	6	1	6	1	6	1
KK170	0	13	0	2	4	3	4	1	1	2	1	2	1	2	1	2	1	2	0
KK171	0	10	0	4	3	5	3	3	1	2	1	2	1	2	1	2	1	2	0
KK172	1	16	0	1	2	5	3	1	1	10	1	10	1	10	1	10	0		0
KK173	0	7	0	2	4	5	5	3	1	1	1	1	1	1	1	1	0		0
KK174	1	11	1	2	4	5	5	1	0		1	3	1	3	1	3	0		0
KK175	0	8	1	2	3	5	4	1	1	2	1	2	1	2	1	2	1	2	0
KK176	1	13	0	1	2	5	3	3	1	4	1	4	1	4	1	4	1	4	1
KK177	0	11	0	4	1	4	2	3	1	0.8	1	0.8	1	0.8	1	1	0		0
KK178	1	8	0	1	3	5	4	1	1	2	1	2	1	2	0		1	2	0
KK179	0	12	0	4	3	5	4	2	1	1.5	1	1.5	1	1.5	0		0		0
KK18	1	14	1	3	3	3	5	1	1	5	1	5	1	5	1	5	1	5	1
KK180	1	16	0	2	3	5	4	1	1	8	1	8	1	8	1	8	0		0
KK181	0	15	0	2	5	3	5	1	1	11	1	11	1	11	1	11	1	11	0
KK182	0	15	0	1	2	5	3	1	1	9	1	8	1	9	1	7	0		0
KK183	1	11	0	2	3	5	4	1	1	4	1	4	1	4	1	4	1	4	1
KK184	0	10	0	1	2	5	3	3	1	2.5	1	2.5	1	2.5	0		0		0
KK185	1	12	0	2	4	3	4	1	1	8	0		0		1	8	0		0
KK186	0	7	0	4	3	5	3	3	1	4	1	4	1	4	1	2	1	4	1
KK187	1	12	0	1	2	5	2	1	1	5	1	5	1	5	0		0		0
KK188	0	13	0	3	4	5	4	3	1	5	1	5	1	5	0		0		0
KK189	1	16	0	2	3	5	4	2	1	9	1	9	1	9	1	9	1	9	0
KK19	1	10	0	1	1	5	2	3	1	3	1	3	1	3	1	3	1	3	0
KK190	1	14	0	1	3	5	4	3	1	4.5	1	4.5	1	4.5	1	5	0		0
KK191	0	14	0	2	4	3	4	1	1	7	1	7	1	7	0		0		0
KK192	1	13	0	1	2	5	3	3	1	9	1	9	1	9	1	9	1	9	0
KK2	0	11	0	3	5	3	5	1	1	9	1	8	1	8	1	8	1	8	1
KK20	1	14	1	2	4	3	5	3	1	3	1	3	1	3	1	3	1	3	1
KK21	1	7	1	2	2	5	3	1	1	6	1	6	1	6	1	6	1	6	1
KK22	1	16	0	3	4	3	5	1	1	0.5	1	2	1	2	1	1	0		0
KK23	0	16	1	1	2	5	2	3	1	3	1	3	1	3	0		0		0
KK24	1	12	0	2	2	5	3	1	1	9	1	9	1	9	0	.	0		1
KK25	1	17	0	2	1	5	3	3	1	4	1	4	1	4	1	2	0		0
KK26	1	12	0	3	3	5	4	1	1	0.3	1	0.3	1	0.3	1	0	0		1
KK27	0	11	0	3	5	3	4	1	1	8	1	0.3	1	0.3	1	1	1	4	1
KK28	0	17	0	3	2	3	5	2	1	0.2	1	0.2	1	0.2	1	0	1	2	1
KK29	0	7	1	1	1	1	1	3	0		1	4	1	4	1	4	0		0
KK3	1	11	0	2	3	3	4	1	1	2	1	2	1	2	1	2	1	2	0
KK30	0	9	0	2	1	5	1	1	1	6	0		1	6	0		1	6	0
KK31	0	11	1	3	3	3	5	2	1	2	1	2	1	2	1	2	1	1	0
KK32	0	7	0	4	2	5	3	3	1	0.4	1	0.4	0		1	0	1	4	1
KK33	0	10	0	2	3	5	3	1	1	8	1	8	1	8	1	8	1	8	1
KK34	0	13	0	3	5	3	5	3	1	5	1	5	1	5	1	4	1	5	0
KK35	0	7	0	2	2	5	4	3	1	2	1	2	1	2	1	2	1	2	1
KK36	0	10	1	2	4	3	4	1	1	2	1	2	1	2	1	2	0		0
KK37	1	9	0	3	3	5	4	3	1	5	1	5	1	5	0		1	5	0
KK38	1	10	0	1	2	1	1	3	1	6	1	6	1	6	1	4	0		0
KK39	1	16	0	3	2	5	5	3	0		1	14	1	14	1	14	1	14	0
KK4	1	9	0	3	2	3	5	1	1	6	1	6	0		1	5	1	6	0
KK40	0	8	0	4	2	5	2	1	1	1	1	1	1	1	0		1	1	0
KK41	0	9	0	1	2	5	2	3	1	3	1	3	1	3	1	3	1	3	0
KK42	1	7	0	3	3	3	2	3	1	0.1	1	0	1	0	0		0		1
KK43	1	10	0	3	3	3	4	1	1	8	1	8	1	6	1	6	1	2	1
KK44	0	10	0	2	2	5	3	3	1	0.1	1	0	1	0	0		0		0
KK45	1	16	1	3	4	3	4	1	1	4	1	4	1	4	1	4	0		0
KK46	0	13	1	1	2	5	2	2	1	10	1	10	1	10	1	10	1	10	0
KK47	1	14	0	2	4	5	4	1	1	3	1	3	1	3	1	3	1	3	0
KK48	0	10	0	3	5	3	5	1	1	8	1	8	1	8	1	6	0		1
KK49	1	14	0	3	4	3	5	1	1	0.5	1	2	1	1	1	1	0		0
KK5	1	15	0	2	1	2	1	1	1	0.1	0		1	5	0		1	5	0
KK50	0	9	0	3	4	3	4	1	1	0.7	1	0.7	1	0.7	1	1	0		0
KK51	1	12	0	3	4	5	4	1	1	0.3	1	0.3	1	0.3	1	0	0		1

Enrollment number	seasvar	salbut	ics	syssteroid	neb	IV	coughsyp	homeopathic	freq	schoolmissed	smoke	residence	cooking	pet	Current step of asthma treatment (step 1-1, step 2-2, step 3-3)	Current medications	hr	rr	spo2	pallor	adenoid	wheezeausc	ht	wt	bmi	fev1	fvc	fev1fvc	pefr
KK162	1	1	1	0	1	0	1	0	4	1	0	1	1	0	3	1	82	22	1	0	0	0	147	38.3	18	75	82	91	3.4
KK163	1	1	1	0	1	1	0	1	3	1	1	0	0	1	2	2	82	24	1	0	0	0	158	45	18	99	130	75	4.8
KK164	1	0	1	1	1	1	1	0	2	1	1	0	0	1	3	2	91	25	1	0	0	1	156	32	13.1	73	84	86	5
KK165	1	0	0	0	1	0	1	1	1	1	1	0	0	1	3	1	98	25	1	0	1	1	120	23	16	46	43	107	1.7
KK166	1	1	1	0	1	0	1	1	3	1	1	0	0	1	3	2	86	24	1	0	1	0	155	36	15	76	98	106	3.5
KK167	1	0	0	0	1	0	1	1	1	1	1	1	0	0	3	1	86	25	1	1	0	1	140	33.5	17.1	64	82	94	3
KK168	1	1	0	0	1	0	1	0	3	1	0	1	1	0	3	2	92	25	1	1	0	0	170	45	15.6	66	87	76	4.4
KK169	1	1	1	0	1	0	1	0	2	1	1	0	0	1	3	3	80	24	1	1	0	0	157	60	24.3	72	86	84	3.5
KK17	1	1	1	1	1	1	0	0	2	1	1	1	1	0	3	2	106	22	1	0	1	1	136	25.6	14	73	82	89	4.1
KK170	1	1	1	0	1	0	1	1	3	1	1	0	0	1	3	3	95	26	1	0	1	0	158	31	12.4	83	75	110	4.2
KK171	1	1	1	0	1	0	1	0	4	1	1	0	1	0	3	2	92	26	1	0	1	0	142	27.4	13.6	101	92	109	2.8
KK172	1	1	1	1	1	1	1	0	4	1	0	1	1	0	2	1	82	24	1	0	0	0	150	34	15.1	78	97	110	5.8
KK173	1	1	1	0	1	0	1	1	3	1	1	1	1	0	3	3	102	26	1	0	0	0	121	20.9	14.3	68	62	108	2.4
KK174	1	1	1	0	1	0	1	1	4	1	1	0	0	1	3	2	92	25	1	1	0	0	139	27.9	14.4	59	93	63	1.9
KK175	1	1	1	0	1	0	0	0	4	1	1	0	0	1	3	1	102	26	1	0	1	0	116	18	13.4	72	74	97	2.2
KK176	1	1	1	0	1	0	1	1	3	1	1	1	1	0	3	1	90	25	1	0	0	0	152	41.3	17.9	85	99	85	4.5
KK177	1	1	1	0	1	0	0	0	1	0	0	1	1	0	3	3	94	25	1	0	0	0	135	28.5	15.7	79	88	89	3.2
KK178	1	1	1	1	1	0	1	1	4	1	1	0	0	1	3	2	88	25	1	0	1	0	135	26	14.3	91	94	96	3.6
KK179	1	1	1	0	1	0	0	0	2	1	1	1	1	0	3	1	86	25	1	0	0	0	135	24.1	13.2	89	89	99	4.2
KK18	1	1	1	1	1	1	1	1	2	1	1	0	0	1	3	2	95	20	1	1	0	0	165	45	16.7	61	87	69	3.5
KK180	1	1	1	1	1	1	0	0	3	1	0	1	1	0	3	1	78	24	1	0	0	1	176	60.3	19.5	84	86	97	4
KK181	1	1	1	0	1	0	0	1	3	1	1	0	0	1	3	3	78	24	1	0	1	1	156	40	16.4	76	96	79	2.8
KK182	1	1	1	0	1	0	0	0	3	1	1	0	0	1	3	2	98	24	1	0	0	1	160	49	19.1	58	37	64	1.9
KK183	1	1	1	0	1	0	1	0	4	1	1	0	0	1	2	2	102	26	1	0	1	0	140	29	14.8	70	61	45	2.5
KK184	1	1	1	0	1	0	1	0	4	0	0	1	1	0	2	3	92	25	1	1	0	0	137	32	17.1	94	101	93	4
KK185	1	1	1	0	1	0	0	0	4	1	1	0	0	1	3	1	86	24	1	0	0	0	142	31	15.4	64	71	86	3.2
KK186	1	1	1	0	1	0	0	0	2	1	0	1	1	0	3	2	112	26	1	0	1	1	117	20.9	15.5	48	51	95	1.5
KK187	1	1	1	0	1	0	0	0	3	1	0	1	1	0	3	2	82	24	1	0	0	0	143	27	13.2	82	96	86	4.5
KK188	1	1	1	0	1	0	1	1	2	1	1	1	1	0	3	3	98	25	1	0	0	1	143	26	12.7	73	74	99	2.7
KK189	1	1	1	0	1	0	0	0	4	1	1	1	1	0	2	1	78	22	1	0	1	0	175	46.4	15.2	55	71	77	5.3
KK19	1	1	1	0	1	0	0	0	3	0	0	0	1	1	2	2	98	22	1	0	0	1	150	37.7	16.8	94	89	105	5.1
KK190	1	1	1	0	1	0	0	0	3	1	0	1	1	0	2	2	86	24	1	1	0	0	142	28	13.9	84	97	108	3.5
KK191	1	1	1	0	1	0	1	1	2	0	1	0	0	1	3	3	82	26	1	0	0	1	146	35	16.4	82	95	103	4.5
KK192	1	1	1	0	1	0	0	0	3	1	0	1	1	0	3	1	86	24	1	0	1	0	152	37.5	16.2	89	98	114	3.9
KK2	1	1	1	0	1	1	0	0	3	1	0	0	0	1	3	1	92	24	1	1	0	1	141	25.2	12.7	58	64	99	1.7
KK20	1	1	1	0	1	0	1	1	4	1	1	0	0	1	3	3	79	24	1	1	1	1	159	49	19.4	41	68	60	2.1
KK21	1	1	1	0	1	1	1	0	4	1	1	0	0	0	3	2	112	27	1	0	0	1	123	19.5	12.9	57	54	105	1.5
KK22	1	1	1	0	1	0	1	0	3	1	1	0	0	1	3	2	79	20	1	0	1	0	162	39.4	15.4	73	85	86	4.2
KK23	1	1	1	0	1	0	1	1	2	1	1	1	1	0	3	1	94	22	1	1	1	1	161	42	16.4	71	69	102	4.6
KK24	1	1	0	0	1	0	1	1	1	1	1	0	0	1	3	1	96	24	1	0	0	0	146	32.2	15.1	83	90	92	3.8
KK25	1	1	0	0	0	0	1	0	2	1	1	1	1	0	3	2	72	20	1	0	0	0	178	55.7	17.5	52	74	70	4
KK26	1	0	0	0	0	0	1	1	1	1	1	0	0	1	3	3	87	24	1	0	1	1	155	40.8	17	61	61	100	4.4
KK27	1	1	1	1	1	1	0	0	1	1	1	0	0	1	3	2	98	27	1	1	0	1	141	25.2	12.7	72	64	113	2.9
KK28	0	0	0	0	0	0	0	0	2	1	1	0	0	1	2	1	86	22	1	0	1	1	137	30.2	16.1	62	95	65	1.7
KK29	1	1	1	1	1	1	0	0	3	1	0	1	1	0	3	1	102	26	1	1	1	0	136	34.5	18.7	73	73	101	3.9
KK3	1	1	1	0	1	0	0	1	1	0	1	0	0	1	2	2	84	24	1	0	0	0	155	36.4	15.3	87	84	89	4.3
KK30	1	1	1	0	1	0	0	0	4	1	0	1	1	0	3	2	97	26	1	0	0	0	128	21.7	13.2	78	77	101	2.8
KK31	1	1	1	0	1	0	0	0	3	0	1	0	0	1	3	3	88	25	1	1	0	1	130	21.5	12.9	91	98	107	3.4
KK32	0	1	1	1	1	1	1	0	2	1	1	0	1	1	3	2	92	24	1	0	0	0	120	20	13.9	112	94	119	2.9
KK33	1	1	1	0	1	1	0	0	2	1	0	1	1	0	3	3	100	27	1	0	1	1	141	26	13.3	55	53	103	2.2
KK34	1	1	1	1	1	0	0	0	3	1	1	0	0	1	3	2	86	26	1	0	0	1	147	28	13	65	86	75	1.8
KK35	1	1	1	1	1	0	0	0	2	0	0	1	1	0	3	2	102	25	1	0	0	0	122	19.5	13.1	109	98	111	3.2
KK36	1	1	1	0	1	0	0	0	3	0	1	0	1	1	3	3	89	25	1	1	0	0	149	38.4	17.3	93	95	97	2
KK37	1	1	1	0	1	0	1	1	2	1	1	0	1	0	3	3	89	27	1	1	1	0	121	19.5	13.3	78	82	94	2.8
KK38	1	1	1	1	1	0	1	0	1	1	1	1	1	0	3	2	104	25	1	0	0	0	136	32.4	17.5	106	102	104	3.6
KK39	1	1	1	1	1	1	0	1	1	1	1	1	1	0	3	3	82	22	1	0	1	1	166	47	17.3	89	102	87	5.2
KK4	1	1	1	0	1	0	0	0	3	0	1	0	0	1	3	2	95	22	1	0	0	0	127	20.7	12.9	60	72	83	2.3
KK40	1	0	1	0	1	0	0	0	3	1	0	1	1	0	3	3	102	27	1	0	0	0	124	24.2	15.7	103	98	104	2.7
KK41	1	1	1	0	1	1	1	1	2	1	0	1	1	0	3	2	92	24	1	1	1	1	121	23	16	71	69	102	2.7
KK42	0	0	0	0	0	0	1	0	1	1	1	1	1	0	3	1	110	28	1	0	0	1	111	17.8	14.4	62	57	109	1.4
KK43	1	1	1	1	1	0	1	1	2	1	1	1	0	1	3	2	97	25	1	1	0	1	149	35	16	103	102	101	3.5
KK44	0	0	0	0	0	0	1	0	1	1	0	1	1	0	3	2	108	27	1	0	0	1	142	36.8	18.3	68	65	95	2.5
KK45	1	1	1	0	1	0	0	1	1	1	1	0	0	1	3	3	89	27	1	1	0	0	152	42	18.2	89	94	95	2.1
KK46	1	1	1	1	1	1	0	0	1	1	1	1	0	1	3	1	88	24	1	1	1	1	163	35.7	13.6	69	145	47	2.6
KK47	1	1	1	0	1	0	1	1	2	0	1	0	1	0	3	3	98	24	1	0	1	1	158	45.7	18.3	73	94	78	2.6
KK48	1	1	1	1	1	1	1	0	2	1	1	0	0	1	3	2	94	25	1	0	0	1	148	30.4	14.1	65	86	75	1.8
KK49	1	1	1	0	1	0	1	1	3	1	1	1	0	1	3	1	82	22	1	0	0	1	162	39.4	15.2	73	85	86	4.2
KK5	1	1	1	0	1	0	1	1	4	1	1	0	0	1	1	4	86	24	1	0	0	0	173	63.6	21.4	78	85	76	5.2
KK50	1	0	0	0	0	0	1	0	4	1	1	0	0	1	3	2	108	27	1	0	0	1	136	23	12.4	80	96	83	2.3
KK51	1	1	1	0	1	0	1	0	2	1	1	0	0	1	3	3	98	25	1	0	0	1	155	40.8	17	61	61	100	1.5

Enrollment number	comorbid	act	cact	act/cact	gina	pql	techq	comp	satisfaction	act1	cact1	act/cact1	gina1	tech1	compl1	pql1	act3	cact3	act/cact3	gina3	techq3	comp3	pql3
KK162	0	22		22	1	62	0	1		19		19	1	1	1	68	22		22	1	1	1	68
KK163	0	16		16	2	52	1	1		17		17	2	1	1	54	18		18	1	1	1	67
KK164	0	16		16	2	54	0	1	13	17		17	2	1	1	64	18		18	1	1	1	66
KK165	1		18	18	2	48	1	1	8		16	16	2	0	0	52		20	20	2	1	0	56
KK166	1	13		13	2	53	1	1		16		16	2	1	1	59	21		21	1	1	1	62
KK167	0	12		12	2	54	1	1	9	15		15	2	0	0	58	18		18	2	1	1	65
KK168	0	11		11	2	40	1	1		16		16	2	1	1	52	19		19	2	1	1	66
KK169	0	15		15	2	54	0	0	8	17		17	2	1	1	58	16		16	2	1	1	61
KK17	1		18	18	2	38	1	1	8		21	21	2	1	1	53		25	25	1	1	1	65
KK170	1	17		17	1	53	1	0		19		19	1	1	1	61	22		22	1	1	1	66
KK171	1	17		17	2	47	0	0		19		19	1	1	1	66	22		22	1	1	1	71
KK172	0	22		22	1	68	1	1	13	22		22	1	1	1	72	24		24	1	1	1	74
KK173	0		20	20	2	57	0	0			18	18	2	0	1	56		19	19	1	1	1	62
KK174	0		19	19	2	65	0	1	10		19	19	2	1	0	61		21	21	1	1	1	71
KK175	1		21	21	2	56	1	1			21	21	2	1	1	61		20	20	1	1	1	66
KK176	0	21		21	1	62	1	1	11	18		18	2	1	1	62	21		21	1	1	1	72
KK177	0		15	15	2	42	0	0			18	18	2	1	0	56		21	21	2	1	0	54
KK178	1		23	23	1	68	1	1	12		22	22	1	1	1	65		24	24	1	1	1	69
KK179	0	13		13	2	46	0	1		16		16	2	1	1	57	14		14	2	1	0	51
KK18	0	21		21	2	38	1	1	11	18		18	2	1	1	45	25		25	1	1	1	84
KK180	0	17		17	2	56	1	0	11	19		19	1	1	1	66	21		21	1	1	1	68
KK181	1	19		19	2	52	1	1		21		21	1	1	1	59	24		24	1	1	1	72
KK182	0	14		14	2	52	1	0		18		18	2	1	1	56	21		21	1	1	1	69
KK183	1		24	24	1	66	1	1	7		18	18	2	1	0	58		16	16	2	0	0	49
KK184	0		21	21	1	67	1	1			22	22	1	1	1	69		24	24	1	1	1	65
KK185	0	17		17	2	64	0	1	9	21		21	1	1	1	68	18		18	2	1	0	61
KK186	1		18	18	2	54	0	1			20	20	2	1	1	59		23	23	1	1	1	62
KK187	0	21		21	1	65	1	1	11	19		19	1	1	1	61	24		24	1	1	1	68
KK188	0	16		16	2	59	0	0		18		18	2	0	1	64	20		20	1	1	1	68
KK189	1	22		22	1	71	1	1	13	21		21	1	1	1	67	21		21	1	1	1	66
KK19	0		17	17	2	43	1	0	8		17	17	2	1	0	67		19	19	2	1	1	78
KK190	0	21		21	1	62	1	1	12	19		19	1	1	0	62	19		19	2	1	0	54
KK191	0	15		15	2	52	0	0		17		17	2	1	1	56	21		21	1	1	1	64
KK192	1	17		17	2	61	0	1	9	19		19	1	1	1	68	21		21	1	1	1	65
KK2	0		18	18	2	22	1	1			16	16	2	0	0	51		22	22	1	1	1	68
KK20	1	18		18	2	53	1	0	9	14		14	2	1	0	70			16	2	0	0	
KK21	0		15	15	2	70	1	1	7		20	20	2	1	1	70		22	22	1	1	1	78
KK22	1	12		12	2	52	0	0	11	15		15	2	0	0	62			14	2	0	0	
KK23	1	14		14	2	49	1	1		17		17	2	1	1	58	18		18	1	1	1	69
KK24	0	22		22	2	66	1	1	8	19		19	1	1	1	73	22		22	1	1	1	80
KK25	0	20		20	1	58	1	1	12	20		20	1	1	1	80	24		24	1	1	1	84
KK26	0	16		16	2	65	1	1	9	19		19	2	1	0	76	16		16	2	1	0	70
KK27	0		19	19	2	22	1	1			20	20	2	0	1	36		18	18	2	1	1	50
KK28	1		15	15	2	37	1	1			21	21	1	1	1	67		18	18	2	1	1	64
KK29	1		21	21	1	102	1	1			18	18	1	1	1	57		19	19	1	1	1	76
KK3	0		18	18	2	44	1	1	11		17	17	2	1	1	68		24	24	1	1	1	71
KK30	0		17	17	2	38	0	1			18	18	2	1	1	45		23	23	1	1	1	64
KK31	0		18	18	2	32	0	0			17	17	2	0	0	58				2	0	0	
KK32	0		19	19	2	66	1	0			19	19	1	1	1	66		19	19	1	1	1	75
KK33	1		20	20	2	44	1	1			18	18	2	1	1	60		25	25	1	1	1	65
KK34	0	20		20	2	56	1	1		13		13	2	0	1	53	18		18	1	1	1	60
KK35	0		16	16	2	36	1	1			17	17	2	0	0	64		20	20	2	1	0	63
KK36	0		15	15	2	41	1	1			18	18	2	0	1	57		20	20	1	1	1	64
KK37	1		15	15	1	76	1	1	8		20	20	1	1	1	74		17	17	2	1	0	67
KK38	0		18	18	1	70	1	1	11		18	18	1	1	1	72		20	20	1	1	1	71
KK39	1	11		6	2	43	1	1	11	14		14	2	0	1	56	17		17	2	1	0	62
KK4	0		15	15	2	40	1	1	9		22	22	1	1	1	74		20	20	1	1	1	69
KK40	0		20	20	2	63	1	1			20	20	1	1	1	68		19	19	1	1	1	65
KK41	1		16	16	2	49	1	1			19	19	2	0	1	60		22	22	1	1	1	68
KK42	0		20	20	2	57	1	1	9		20	20	2	0	1	68		18	18	2	0	1	70
KK43	0		16	16	2	48	0	0	10		18	18	2	0	1	58		19	19	2	1	1	72
KK44	0		19	19	2	54	1	1					2	0	0					2	0	0	
KK45	0	13		13	2	60	0	1	12	15		15	2	0	1	64	19		19	1	1	1	70
KK46	1	12		12	2	57	1	1		15		15	2	1	1	69	21		21	1	1	1	77
KK47	1	18		18	2	60	0	1	10	20		20	1	1	1	70	17		17	2	0	0	69
KK48	0		18	18	2	58	0	0			21	21	2	1	1	64		24	24	1	1	1	70
KK49	0	12		12	2	54	0	0	9	14		14	2	0	0	62			15	2	0	0	
KK5	1	21		21	1	43	1	1	12	19		19	1	1	1	68	17		17	2	1	0	58
KK50	0		20	20	2	62	1	1			21	21	1	0	1	66		21	21	1	1	1	72
KK51	0	16		16	2	64	0	1	9	18		18	1	1	1	70	16		16	2	0	0	67

MASTER CHART

Enrollment number	mode	age	gen	foccup	fedu	moccup	medu	livingaccm	cough	coughdur	bd	bddur	wheeze	wheezedur	chestight	chestightdur	nasalblock	nasalblockdur	fever	seasvar	salbut	ics	syssteroid	neb	IV	coughsyp	homeopathic	freq	schoolmissed	smoke	residence	cooking	pet	Current step of asthma treatment (step 1-1, step 2-2, step 3-3)	Current medications	hr	rr	spo2	pallor	adenoid	wheezeausc	ht	wt	bmi	fev1	fvc	fev1fvc	pefr	comorbid	act	cact	act/cact	gina	pql	techq	comp	satisfaction	act1	cact1	act/cact1	gina1	tech1	compl1	pql1	act3	cact3	act/cact3	gina3	techq3	comp3	pql3
KK52	1	12	0	4	3	5	3	3	1	10	1	10	1	10	1	5	1	10	0	1	1	1	0	1	1	1	1	3	1	1	0	0	1	3	1	84	24	1	0	1	0	146	32.2	15.1	83	90	92	3.8	1	22		22	1	66	1	1	8	19		19	1	1	1	70	22		22	1	1	1	78
KK53	1	14	0	1	1	5	2	3	1	4	1	4	1	4	1	4	0		0	1	1	1	0	1	0	0	0	4	0	1	1	1	0	3	2	87	22	1	0	0	0	178	55.7	17.6	52	74	70	1.9	0	20		20	2	58	0	1	12	20		20	1	1	1	78	24		24	1	1	1	82
KK54	0	13	0	3	3	5	3	1	1	12	1	10	1	12	1	10	0		1	1	1	1	0	1	0	1	0	2	1	1	1	1	1	3	1	104	24	1	0	0	1	173	47	15.9	81	80	100	2	0	13		8	2	40	1	1		18		18	2	0	1	62	22		22	1	1	1	80
KK55	0	8	0	1	2	5	2	1	1	1.5	1	1.5	1	1.5	1	2	1	15	1	1	1	1	0	1	0	1	0	3	1	0	1	1	0	3	1	112	28	1	1	1	1	132	38	21.8	78	96	81	0.9	1		16	16	2	58	0	1			18	18	2	1	1	60		24	24	1	1	1	65
KK56	0	16	1	1	2	5	2	3	1	3	1	3	1	3	1	3	0		0	1	1	1	0	1	0	1	1	1	0	1	1	1	0	3	3	87	22	1	1	0	1	160	41.6	16.3	71	69	102	1.7	0	16		16	2	64	1	1		19		19	2	1	1	68	21		21	1	1	1	72
KK57	0	11	0	3	4	3	4	1	1	5	1	5	1	5	1	5	1	5	1	1	1	1	0	1	0	1	0	2	1	1	0	0	1	3	2	92	26	1	0	1	1	144	24.8	12	73	82	94	2.5	1		18	18	2	62	1	1			19	19	1	1	1	64		22	22	1	1	1	68
KK58	0	7	1	3	5	5	5	2	1	0.1	1	0.1	1	0.1	0		0		1	0	1	1	0	1	1	1	0	1	1	1	1	1	0	3	2	112	28	1	0	0	1	110	18.2	15	96	91	105	2.7	0		16	16	2	54	1	1			19	19	2	0	0	62		21	21	1	1	1	68
KK59	0	10	0	2	3	3	4	1	1	3	1	3	1	3	0		0		0	1	1	1	0	1	0	1	1	3	1	1	0	0	1	3	1	102	25	1	0	1	1	136	26.2	14.2	21	35	61	0.7	1		15	15	2	56	0	0			17	17	2	0	1	60		19	19	1	1	1	70
KK6	1	10	1	3	2	5	4	1	1	3	1	3	1	2	1	2	1	2	1	1	1	1	0	1	0	1	0	3	1	1	0	0	1	2	3	88	24	1	0	0	0	130	22.5	13.4	85	62	91	2.9	0		16	16	2	26	1	1	8		16	16	2	0	0	54		21	21	1	1	1	62
KK60	0	15	0	2	2	5	3	3	1	0.2	1	0.2	0		0		0		0	1	1	1	0	1	0	1	1	4	1	1	1	1	0	3	3	102	24	1	0	0	1	161	66	25.5	93	106	87	1.2	0	10		10	2	58	1	1		17		17	2	0	1	64	20		20	1	1	1	68
KK61	0	14	0	3	5	3	3	1	1	0.5	1	0.5	1	0.5	1	1	1	5	1	1	1	1	0	1	1	1	0	4	1	1	0	0	1	3	3	88	24	1	0	1	1	170	63.5	22	83	84	98	6.9	1	15		15	2	56	1	1		17		17	2	1	1	66	22		22	1	1	1	68
KK62	0	15	0	2	3	3	5	1	0		1	0.5	1	0.5	1	1	0		0	0	1	1	0	1	0	0	0	2	0	1	0	0	1	2	2	82	24	1	0	0	0	173	49	16.4	79	73	109	5.2	0	14		14	2	62	1	1		20		20	1	1	1	68	20		20	1	1	1	64
KK63	0	14	0	3	2	3	3	3	1	3	1	3	1	3	1	3	0		0	1	1	1	0	1	0	1	1	3	1	1	1	1	1	3	2	106	25	1	0	0	0	171	50	17.1	42	52	81	3.3	0	18		18	2	64	1	1		20		20	1	1	1	68	24		24	1	1	1	70
KK64	0	11	0	3	5	3	5	1	1	5	1	5	1	5	1	5	1	5	1	0	1	1	0	1	1	1	1	3	1	1	0	0	1	3	1	82	24	1	0	0	0	146	32	15	65	68	96	4.4	0		18	18	2	58	1	1			19	19	2	1	1	60		19	19	1	1	1	68
KK65	0	7	1	2	3	3	3	3	1	2	1	2	1	2	1	2	1	2	0	1	1	1	0	1	0	0	0	2	1	1	1	0	0	3	2	118	27	1	0	1	1	118	20	14.3	68	65	76	2.5	1		16	16	2	61	1	1			18	18	2	0	1	64		19	19	1	1	1	68
KK66	0	10	1	3	3	3	4	2	1	8	1	8	1	8	1	5	0		0	1	0	1	0	1	0	1	1	2	1	0	1	0	1	3	1	92	26	1	0	0	0	147	37.7	17.7	89	103	86	3.3	0		20	20	2	68	0	1			20	20	2	1	1	72		19	19	1	1	1	70
KK67	0	7	0	2	3	5	4	1	1	5	1	5	1	5	0		0		0	1	1	1	0	1	0	1	1	4	1	1	0	0	1	3	1	112	26	1	0	0	1	117	19.8	14.5	57	51	110	1.9	0		16	16	2	56	1	1			22	22	2	0	0	60		19	19	2	1	1	68
KK68	0	16	0	2	4	5	5	3	1	1	1	1	1	1	0		1	1	0	1	1	1	0	1	0	1	0	3	0	1	0	1	0	3	2	98	24	1	0	1	1	177	43.2	13.8	59	69	85	1.6	1	16		16	2	60	0	1		19		19	2	1	1	64	22		22	1	1	1	68
KK69	0	15	0	2	3	5	4	2	1	0.5	1	0.5	1	0.5	1	1	0		0	1	1	1	0	1	0	1	1	3	0	1	1	0	1	3	3	86	22	1	0	0	0	160	34.5	13.5	83	75	111	2.8	0	16		16	2	58	1	1		20		20	2	0	1	67	22		22	1	1	1	64
KK7	0	9	0	2	1	5	1	1	1	6	0		0		0		1	6	0	1	1	1	0	1	0	0	0	4	1	0	1	1	0	2	2	97	22	1	0	0	0	128	21.7	13.2	52	68	89	1.7	0		17	17	2	38	1	1			22	22	2	1	0	61		25	25	1	1	1	69
KK70	0	7	0	1	2	5	3	1	1	6	1	6	1	6	1	6	1	6	0	1	1	1	0	1	1	0	0	2	1	1	1	0	1	3	2	108	28	1	0	1	1	113	18.3	14.6	54	68	85	1.6	1		19	19	2	64	0	1			16	16	2	0	0	58		19	19	1	1	1	68
KK71	0	12	0	1	1	5	2	1	1	9	1	9	1	9	1	9	1	9	1	1	1	1	0	1	0	1	0	4	0	1	0	0	0	3	3	102	26	1	0	1	0	144	35.2	17	53	50	107	2	1	13		13	2	61	0	1		17		17	2	1	1	62	16		16	2	1	0	64
KK72	0	16	1	2	4	5	4	1	1	14	1	14	1	14	1	9	1	9	0	1	1	1	0	1	0	1	1	4	1	1	0	1	1	3	4	88	24	1	1	1	0	153	41.5	17.7	54	59	93	2.7	1	15		15	2	68	1	1		18		18	1	1	1	70	18		18	1	1	1	72
KK73	0	7	1	2	5	3	5	1	0		1	6	0		0		0		0	1	1	1	0	1	0	0	0	3	1	1	0	0	1	3	3	106	26	1	0	0	1	116	18.6	14.1	49	46	106	1.5	0		17	17	2	56	1	1			20	20	2	0	1	62		24	24	1	1	1	66
KK74	0	14	0	1	3	5	3	3	1	11	1	11	1	11	0		1	11	0	1	1	1	0	1	0	1	1	3	0	1	0	0	0	3	2	98	25	1	0	1	0	149	36.8	16.8	65	74	88	1.5	1	13		13	2	64	0	1		18		18	2	1	1	66	20		20	1	1	1	70
KK75	0	14	1	2	3	5	4	2	1	1	1	1	1	1	1	1	0		0	1	1	1	0	1	0	0	0	2	0	1	1	1	0	3	3	102	25	1	0	0	0	153	32.2	13.9	93	96	97	5.5	0	20		20	2	62	0	1		18		18	2	1	1	64	21		21	1	1	1	68
KK76	0	7	0	2	4	5	4	1	1	0.1	1	0.1	0		0		1	4	1	1	0	0	0	1	0	1	0	2	1	0	1	1	0	3	2	118	26	1	0	1	1	125	28.7	18.4	71	64	110	2.3	1		20	20	2	57	0	0			22	22	2	0	1	60		21	21	1	1	1	64
KK77	0	12	0	1	3	5	3	3	1	0.4	1	0.4	1	0.4	1	0	1	4	0	1	0	0	0	1	0	1	0	1	0	1	1	0	0	3	2	92	25	1	0	1	1	140	27.4	14	73	86	84	2.5	1	11		11	2	53	1	1		18		18	2	0	1	62	16		16	2	1	1	64
KK78	0	15	1	1	3	5	3	2	1	0.7	1	0.7	1	0.7	0		1	7	0	1	1	1	0	1	0	0	0	1	1	1	1	0	0	3	3	108	24	1	0	0	0	160	41	16.2	74	78	84	2.6	0	17		17	2	70	0	1		20		20	1	1	1	68	20		20	1	1	1	70
KK79	0	9	0	2	3	5	4	2	1	2	1	2	1	2	1	2	1	2	0	1	1	1	0	1	0	0	0	4	0	1	0	0	1	3	1	96	25	1	0	0	0	134	22.6	12.8	86	82	103	3.4	0		21	21	2	60	0	0			20	20	2	1	1	68		19	19	1	1	1	68
KK8	1	17	0	1	4	3	5	1	1	2	1	2	1	2	1	2	1	2	0	0	1	0	0	1	1	1	0	3	0	0	0	1	1	3	2	112	20	1	0	0	1	174	61.1	20.2	74	84	87	6.7	1	17		17	2	32	1	1	6	20		20	2	0	1	68	24		24	1	1	1	73
KK80	0	13	0	3	3	5	4	3	1	10	1	10	1	10	1	8	0		1	1	1	1	0	1	1	1	1	3	1	1	1	1	0	3	1	98	24	1	0	0	0	147	30.2	14.2	73	75	97	3.3	3	19		19	2	52	0	1		20		20	2	1	0	62	20		20	1	1	1	68
KK81	0	17	1	1	2	5	3	1	1	0.7	1	0.7	1	0.7	0		0		0	1	1	1	0	1	0	1	0	3	0	1	0	0	1	3	2	88	24	1	1	0	0	162	46.3	17.6	81	83	98	4	0	13		13	2	50	0	0		17		17	2	0	1	58	18		18	2	0	0	62
KK82	0	14	0	2	3	3	4	3	1	7	1	7	1	7	1	5	1	7	0	1	1	1	1	1	1	0	0	2	1	0	1	1	0	2	3	96	24	1	0	0	0	180	50.8	15.7	106	94	113	7.5	0	23		23	1	69	1	1		22		22	1	1	1	65	22		22	1	1	1	71
KK83	0	9	0	1	2	5	3	3	1	3	1	3	1	3	1	3	1	3	0	1	1	1	0	1	0	1	1	1	1	0	1	1	0	3	2	108	26	1	0	1	0	141	33.3	17	69	82	84	2.2	1	23		23	1	65	1	1		18		18	2	0	0	62	20		20	1	1	1	68
KK84	0	8	0	4	3	5	3	1	1	2	1	2	1	2	0		1	2	0	1	0	0	0	1	1	1	0	3	1	0	1	1	0	3	1	116	27	1	1	0	1	130	23	13.6	67	74	82	2.6	0		14	14	2	55	1	1			18	18	2	0	1	65		22	22	1	1	1	69
KK85	0	13	0	4	2	2	2	2	1	8	1	8	1	8	0		0		0	1	1	1	0	1	0	1	0	3	1	1	0	1	1	3	3	110	28	1	0	0	0	159	37	14.6	40	103	82	2.8	0	17		17	2	66	1	0			20	20	2	1	0	61		19	19	1	1	1	68
KK86	0	12	1	2	4	2	5	3	1	10	1	10	1	8	1	6	0		0	1	0	0	0	1	0	1	1	2	1	1	1	1	0	3	2	94	26	1	1	0	1	149	32.6	14.7	63	84	75	2.5	0	12		12	2	55	1	1		16		16	2	0	1	63	20		20	1	1	1	69
KK87	0	14	0	2	2	5	4	2	1	8	1	8	1	8	1	6	1	8	0	1	1	1	0	1	0	1	0	3	0	1	1	1	0	3	3	102	26	1	0	1	0	147	43	19.9	80	79	101	5.7	1	15		15	2	57	0	0		19		19	2	0	1	58	21		21	1	1	1	68
KK88	0	14	0	4	3	5	3	1	0		1	0.2	0		0		0		0	1	0	0	0	0	0	0	0	3	0	0	1	1	0	3	2	88	24	1	0	0	0	163	46	17.3	88	92	103	4.8	0	17		17	2	60	1	1		19		19	2	1	1	66	22		22	1	1	1	68
KK89	0	8	1	3	3	5	4	3	1	4	1	4	1	4	1	4	1	4	0	1	0	0	0	1	0	1	0	4	1	1	0	0	1	3	1	114	27	1	0	1	1	119	20	14.1	65	61	108	1.2	1		18	18	2	59	1	1			18	18	2	0	0	62		23	23	1	1	1	64
KK9	0	8	0	1	1	1	1	1	0		1	2	1	2	1	2	0		0	1	1	1	1	1	1	0	0	2	1	0	1	1	0	3	1	84	24	1	0	1	0	136	34.5	18.7	81	92	82	3.9	1		19	19	1	102	1	1			18	18	1	0	1	57		19	19	1	1	0	76
KK90	0	16	1	2	5	3	5	1	1	6	1	6	1	6	1	4	0		1	1	1	1	0	1	0	1	0	4	1	1	1	0	1	3	2	94	26	1	1	0	1	162	46	17.5	78	87	92	4.8	0	17		17	2	56	0	0		19		19	2	0	1	63	19		19	2	1	1	65
KK91	0	17	1	1	2	5	3	3	1	15	1	15	1	15	1	10	1	15	0	0	1	1	0	1	1	1	0	4	1	1	0	0	1	3	2	90	22	1	1	1	0	155	37	15.6	90	94	96	4	1	19		19	2	64	1	0		17		17	2	1	0	58	20		20	2	1	1	62
KK92	0	12	0	2	4	5	5	3	1	8	1	8	1	8	1	6	0		0	1	1	1	0	1	0	1	0	3	1	1	1	1	0	3	3	96	25	1	0	0	0	156	34	14	76	85	89	3.2	0	13		13	2	52	0	0		19		19	1	1	1	65	19		19	1	1	1	64
KK93	0	15	0	2	4	3	4	1	1	4	1	4	0		1	4	0		0	1	0	0	0	1	0	1	1	2	1	1	1	0	1	3	2	88	23	1	0	1	1	173	50.3	16.8	67	73	91	5.9	1	16		16	2	60	1	1		18		18	2	0	0	62	18		18	2	1	1	66
KK94	0	13	1	2	4	3	5	1	1	10	1	10	1	10	1	10	0		0	1	1	1	0	1	0	0	0	1	1	1	0	0	1	3	3	102	24	1	0	0	1	157	44	18.1	61	67	90	3.3	0	16		16	2	56	0	0		18		18	2	0	0	62	19		19	1	1	1	66
KK95	0	16	0	2	3	5	4	2	1	5	1	5	0		1	5	0		0	1	1	1	0	1	1	1	1	2	1	1	0	0	1	3	3	92	24	1	0	1	0	178	44.7	14.1	66	61	104	3.7	1	19		19	1	68	1	1		19		19	1	1	1	65	22		22	1	1	1	68
KK96	1	12	0	2	4	3	4	1	0		1	5	1	5	1	5	0		0	1	1	1	0	1	0	0	0	3	1	1	0	0	1	2	1	104	26	1	0	1	0	147	31.8	14.9	78	97	80	3.7	1	15		15	2	57	1	1	10	18		18	2	0	0	62	19		19	1	1	1	68
KK97	1	11	1	2	2	3	4	1	1	3	1	3	1	3	1	3	1	3	0	1	1	1	0	1	1	1	0	2	1	1	0	0	1	3	2	110	27	1	1	1	1	135	22	12.1	68	88	78	1.8	1	15		15	2	56	1	1	12	18		18	2	0	0	61	19		19	1	0	1	66
KK98	1	12	0	2	4	5	4	2	0		1	2	0		1	2	1	2	0	1	1	1	0	1	0	0	0	1	1	1	1	1	0	3	3	110	26	1	0	0	1	142	26	12.9	51	65	78	2	0	16		16	2	54	0	0	8	18		18	2	0	1	60	17		17	2	0	0	57
KK99	1	8	0	4	3	5	4	3	1	1	0		0		1	1	1	1	0	1	0	0	0	1	0	1	1	2	1	1	1	0	0	3	2	112	28	1	0	0	0	132	24.7	14.2	67	86	78	2.4	0		17	17	2	54	1	1	13		19	19	2	0	1	63		20	20	1	1	1	68