Medical Report

Tzaneen 2023

medical checks
for children

Introduction

From October 6 till October 14th 2023 Medical Checks for Children (MCC) visited Tzaneen in the Mopani District for the first time during an exploratory medical mission. In this period the MCC team checked and treated a total of 1220 children free of costs.

Tzaneen is a large town situated in the Mopani District of the Limpopo province in the northern part of South Africa. It is Limpopo's second largest town after Polokwane. About 475,000 people reside within a 30 km radius. The distance from Tzaneen to Johannesburg is approximately 420 km. The nearest provincial hospital is Elim Hospital located 140 km away.

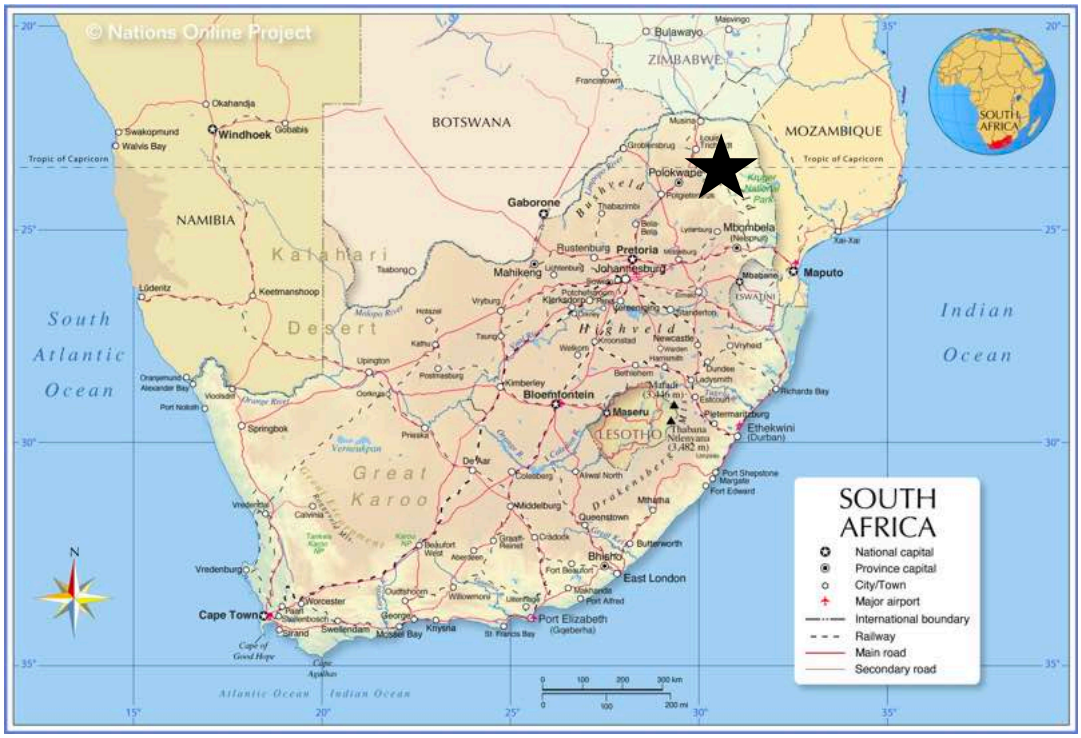

Figure1: Tzaneen marked by a black star located in Mopani district, Limpopo province, South Africa.

The medical checks were organized in close cooperation with Father Chris Babona from Kurisanani St. Scholastica, a non-governmental organization which aims to serve vulnerable communities in Limpopo through provision of safe water, sanitation, and hygiene as well as other community developmental services, such as education, and housing projects in collaboration with www.homeplan.nl.

The cooperation from MCC and with Kurisanani consisted of the following (amongst others):

- Announcement of the medical camp in the different villages.
- All contacts with districts/governmental officers, the mission hospital and the local clinics.
- Selecting volunteers from the MAMAS.
- Selection nurses from the regional local clinics.
- Co-Ordering medication listed by MCC.
- Arranging food, drinks and lodging for the MCC team.
- Transportation of the MCC team from the lodgment to the villages.
- Provide follow-up for the referred children: arranging hospital visits.

The MCC team consisted of twelve members from The Netherlands: Ines von Rosenstiel (medical-end responsible and mission leader, pediatrician) Veronique Schram (organization-end responsible, nurse), Anton te Riet Scholten (family physician), Anneke Landstra (pediatrician), Stephen van der Elshout (technical physician), Ellen Leyds (psychologist), Remco Franssen (internal medicine consultant), Sil van den Berselaar (tropical doctor in training), Julia Borgonjen (family physician), Ilse Tomassen (fysiotherapist and acupuncturist), Marieke Harking (ER nurse), and Monique van Oostende (medical assistant).

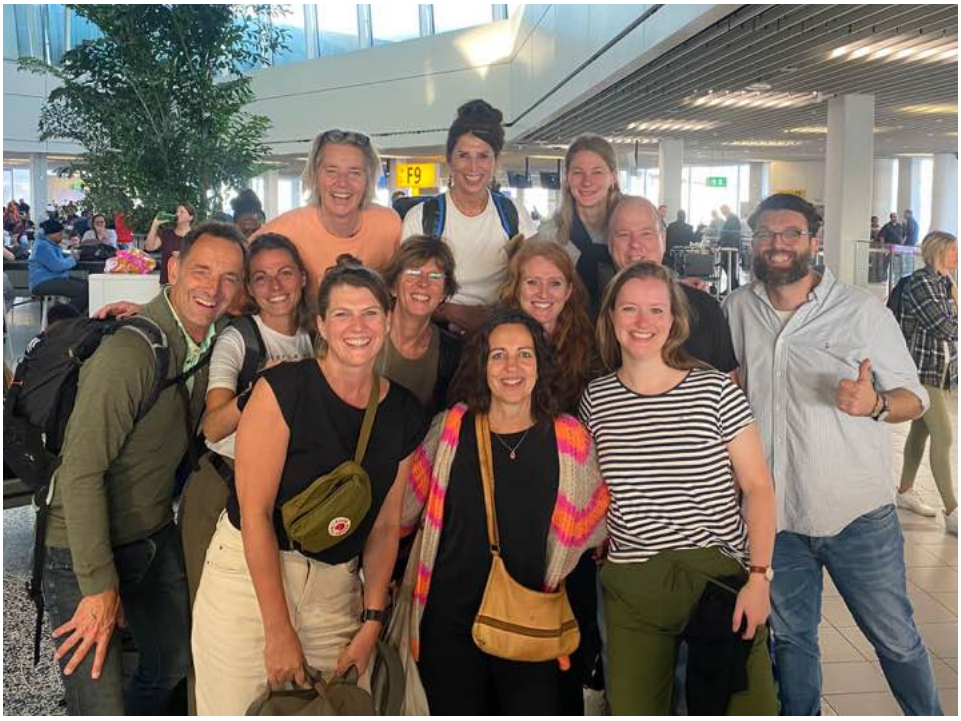

Figure 2: the MCC team

The aim of this exploratory medical mission to Tzaneen was to make an inventory of the local health situation, treat the children if necessary and to advise Father Chris Babona on future steps to take. In addition, we focussed on the dental situation of the children, as well as the antiworm program and healthy eating (education on childhood obesity and caries in relationship to diet). All the information gathered was used to make a decision whether or not a plan of action is required and it's possible contents.

The medical camp was organized in collaboration with Kinderfonds MAMAS, Kurisanani St. Scholastica and MCC, with the prior agreement of children to be checked with written consent of their parents or caregivers.

Technical equipment, medical supplies, toothbrushes and knitted hats were brought from the Netherlands by the MCC team members. Medication was ordered by RDL pharmacies, Mr Elias Mukwevho.

Medical Checks for Children on location:
During the free of costs medical checks, the children were checked according to the different stations of the MCC carrousel:

1. Registration of the child.
2. Measuring height and weight.
3. Blood test (hemoglobin) and urine test and/or HIV test when indicated.
4. Physical examination by a medical doctor.
5. Education on hygiene and tooth brushing (a toothbrush was given to each child).
6. Giving medication (pharmacy).
7. Enter children's files in data base.

Special attention was given to the transfer of knowledge on hygiene and dental care to the children and parents by use of the information provided by Aisha and Friends (www.aishaandfriends.com).

Figure 3: caregivers and children queuing for registration on location at Donkerhoek

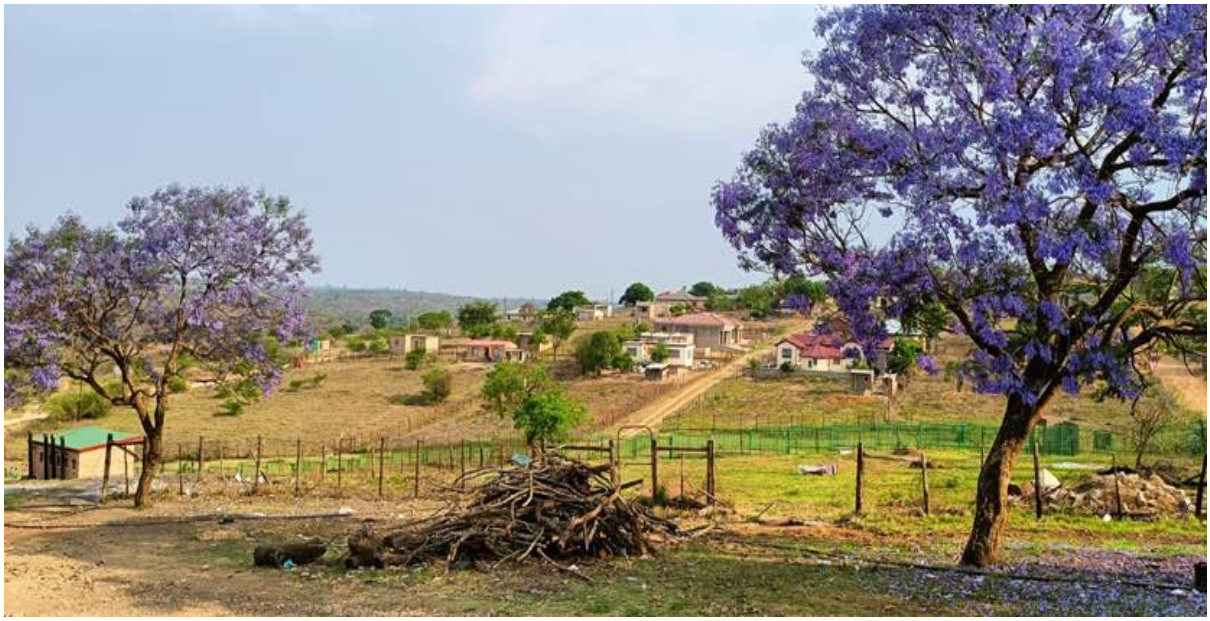

Figure 4: local landscape with Jacaranda trees in bloom

Results Medical Camp in Tzaneen, Mopani District

During this exploratory medical camp MCC evaluated a total of 1220 children from different primary schools and the villages surrounding these schools. Most important findings are described below, and detailed tables of the findings are provided in Annex A.

Children and caregivers from different villages visited the medical camp set up in the three locations of the schools we visited (**Mulima, Donkerhoek and Muila**). The majority of the children who visited the medical camp were accompanied by one of their parents, grandparents or other caregiver. An exception were some classes in Mulima school, were the children were accompanied by their schoolteacher. Necessary medication was given to the caregivers of these children later that week by the teacher and was stored in separate boxes with adequate information for the caregivers.

Table 1: Number of checked children per day and geographical location

Check locations	**08/10/23**	**09/10/23**	**10/10/23**	**11/10/23**	**12/10/23**	**13/10/23**	**Total**
St. Scholastica (Mulina)	231	60	298	0	136	0	725
Tuwani (Donkerhoek)	0	0	0	253	0	0	253
Muila	0	0	0	0	0	242	242
Total	**231**	**60**	**298**	**253**	**136**	**242**	**1220**

Table 2: Child with care taker at the day of the check

	Total		**St. Scholastica (Mulina)**		**Tuwani (Donkerhoek)**		**Muila**	
	1220		**Total= 725**		**Total= 253**		**Total= 242**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
No	5	0%	4	1%	1	0%	0	0%
Yes	1003	82%	511	70%	251	99%	241	100%
Teacher	211	17%	210	29%	1	0%	0	0%

We are very pleased with the high attendance of caregivers, as an important part of the medical camp is the transfer and exchange of medical and healthcare information, from the parents to the doctors and vice versa. We learned from previous medical camps that the presence of caretakers will make the outcomes from a check at the medical camp much more sustainable.

In the preparations prior to the mission and in the written information for the parents the focus was made on young children aged 0-5 years. During the checks children up to a maximum of 12 years are seen. A small group of mentally handicapped children were an exception, with some adolescents up to the age of 18 years. Of the 1220 children, 23% were below the age of 5 years, 63% of the children seen were between 5 and 10 years of age, and 14% were above 10 years of age. During the medical camp at some locations, we had to lower the maximum age of children to be seen from 12 to 9 years due to the high number of children attending the medical camp and hence possible shortage of materials.

Table 3: Summary of checked children per geographical location, age and gender

	Total		**St. Scholastica (Mulina)**		**Tuwani (Donkerhoek)**		**Muila**	
	1220		**Total= 725**		**Total= 253**		**Total= 242**	
Age	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
<=1 year	78	6%	33	5%	24	9%	21	9%
>1 en <5 years	198	16%	136	19%	37	15%	25	10%
<5 years	285	23%	177	24%	62	25%	46	19%
>=5 en <=10 years	765	63%	426	59%	144	57%	195	81%
>10 years	170	14%	122	17%	47	19%	1	0%
Gender								
Boy	622	51%	373	51%	129	51%	120	50%
Girl	586	48%	344	47%	121	48%	121	50%

The first five years of a child's life are the most crucial, and determine their health and wellbeing in adulthood, hence health projects like this are so critical and we are happy that parents of the young ones found their way to the medical camp.

The following findings can be highlighted:

- Moderate prevalence of anaemia (28% for all children taken blood, 8% not tested due to limited tests and 29% for children < 5 years), compared to 15.5% in the Netherlands (< 5 years) (WHO, 2019).
- Moderate prevalence of stunting (8% in total, which is the average in South Africa in 2022 and 17% for < 5 years), compared to 28% in Uganda (for < 5 years), and 1.6% in the Netherlands (WHO, 2020).
- Low prevalence of wasting (1% for both total and for < 5 years), compared to 3,5% in Uganda (for < 5 years) and < 0.3% in the Netherlands (< 5 years) (WHO 2020).

- High prevalence of acute worm infection (18%) and few children having access to a deworming program (only 2% of children were given a deworming tablet in the 6 months prior to the check). Antiworm medication in the governmental program is out of stock from march 2023 onwards in the Limpopo province.
- Other frequent diagnoses: cariës (13%) and various skin diseases, in total 12% (tinea capitis (5%), eczema (2%), dermatomycosis (1%), scabies (2%) and others (2%)).
- Noticeably no pneumonia or malaria cases.
- Several children with potential heart problems were identified, 2 children with a suspected pathological murmur and other rhythm conditions. In total 4 children are referred to a cardiologist for further diagnosis and treatment.
- In total 63 children were referred to specialists for further diagnostics. These children and parents will benefit from further follow-up.
- In total 35 children were referred to a dentist in Elim Hospital.
- In total 22 children will be enrolled in a social program.

Most frequent treatment given to the children was deworming (90%), multivitamins (34%), iron supplementation for the child (2%) and 13 mothers of a child with anaemia who were breastfeeding received iron supplementation, various cremes for skin diseases (9%) and 22 children received antibiotics (ENT and infected wounds).
There were no specific trends seen in either disease, treatment or follow-up related to a specific location, except that in Muila the prevalence of stunting was 12% compared to 6 and 7% on the other locations. The same holds true for weight, 6% underweight children in Muila, compared to 3 and 4% in Donkerhoek and Mulina. Anaemia was highest in Mulima compared to the other locations. Caries and tinea capitis were most prevalent in children from the Donkerhoek location.

Malnutrition

Malnutrition, in the sense of underweight or stunting is still a reality in South Africa. Of the children seen in the medical camp 4% showed underweight, 8% stunting and 1% wasting. Especially the prevalence of stunting was high.

Within MCC growth abnormalities were assessed by measuring and weighing all children in a standardized fashion, using the following criteria:

• Underweight = weight for age at or under the third percentile of the reference population (WHO growth curves), only children up to 10 years old. This is an indicator of malnutrition or weight loss because of disease.
• Wasting = weight for height at or under the third percentile of the reference population (WHO growth curves), only children up to 120 cm in height. This is an indicator of acute malnutrition.
• Stunting = height for age at or under the third percentile of the reference population, (WHO growth curves), only children up to 19 years of age. This is an indicator of chronic malnutrition.

Malnutrition is thought to account for one third of all deaths in children under five (UN Millennium Development Goals). Malnutrition has been related to poor cognitive and school performance. The main factors contributing to malnutrition are rural poverty, lack of sanitation, poor living conditions and a lack of energy, protein intake, iron and multivitamins.

During the medical camp we gave nutritional advice to all children and caretakers, with emphasis on green vegetables and fruit rich in vitamin C. Father Chris Bobona and Kinderfonds MAMAS recently invested in huge vegetable gardens around the Mulima school, and houses in the neighboring villages. Education in schools on nutritious food and providing a school lunch containing vegetables and fruits, is endorsed by MCC.

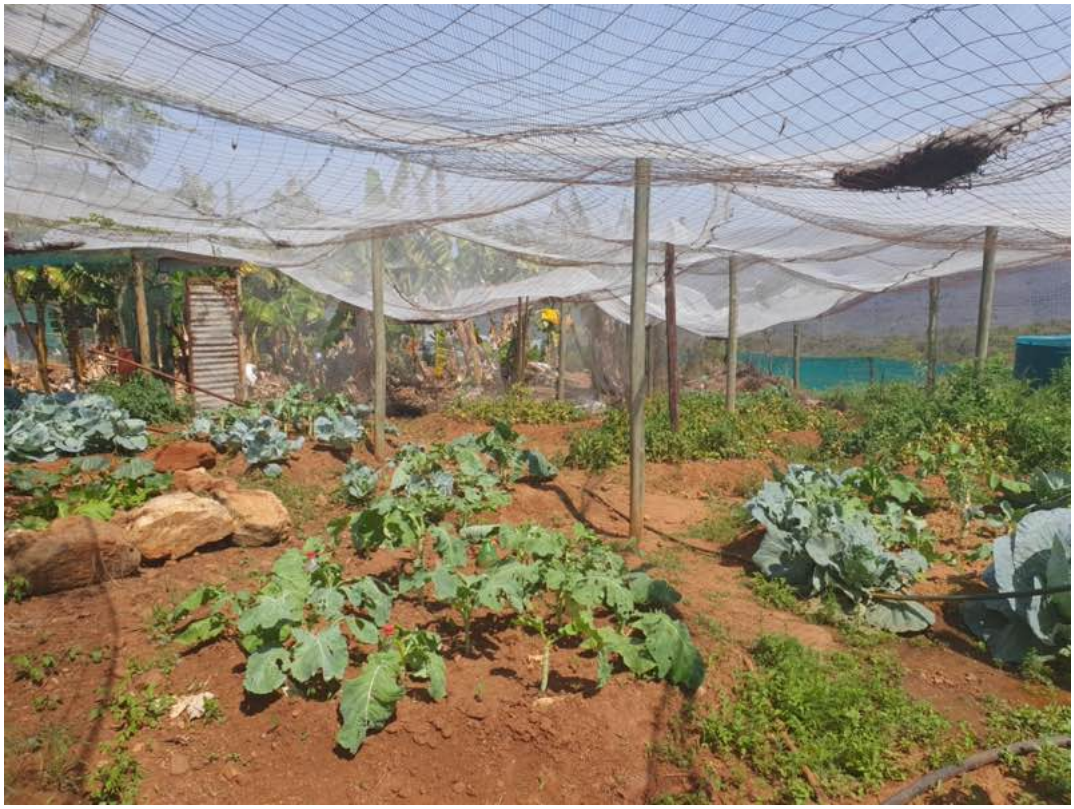

Figure 5: vegetable plots around Mulima school

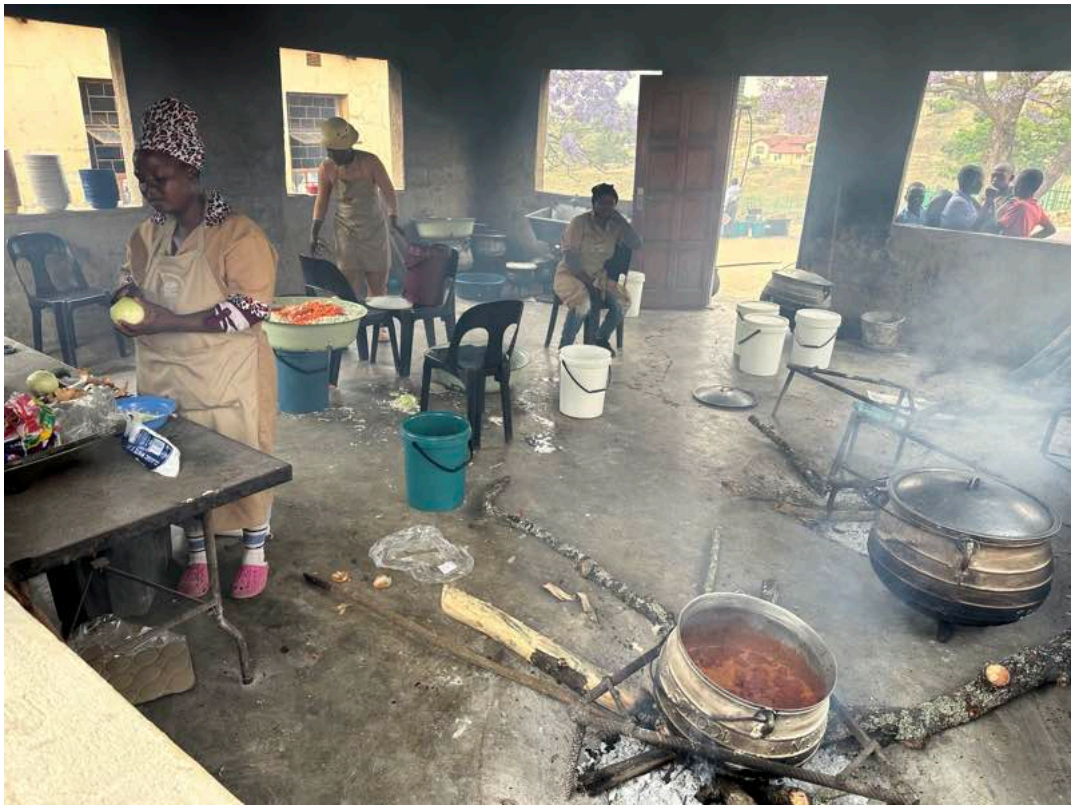

Figure 6: preparations of school lunch at Donkerhoek

Table 4: Prevalence of weight/age at or under P3 (underweight) per geographical location by age and gender

	Total		St. Scholastica (Mulina)		Tuwani (Donkerhoek)		Muila	
	1220		Total= 725		Total= 253		Total= 242	
	N	%	n	%	n	%	n	%
Underweight	49	4%	27	4%	7	3%	15	6%
No underweight	1006	82%	580	80%	201	79%	225	93%
Unknown	165	14%	118	16%	45	18%	2	1%
Underweight children per age								
<=1 year	1	1%	0	0%	0	0%	1	5%
>1 en <5 years	16	8%	12	9%	1	3%	3	12%
<5 years	17	6%	12	7%	1	2%	4	9%
>=5 en <=10 years	30	4%	13	3%	6	4%	11	6%
>10 years	2	17%	2	22%	0	0%	0	0%
Underweight children per gender								
Boy	27	55%	17	63%	3	43%	7	47%
Girl	22	45%	10	37%	4	57%	8	53%

Table 5: Prevalence of length/age at or under P3 (stunting) per geographical location by age and gender

	Total		St. Scholastica (Mulina)		Tuwani (Donkerhoek)		Muila	
	1220		Total= 725		Total= 253		Total= 242	
	N	%	n	%	n	%	n	%
Stunting	95	8%	49	7%	16	6%	30	12%
No stunting	1073	88%	648	89%	217	86%	208	86%
Unknown	52	4%	28	4%	20	8%	4	2%
Stunting children per age								
<=1 year	13	17%	4	12%	5	21%	4	20%
>1 en <5 years	33	17%	26	19%	2	5%	5	21%
<5 years	47	17%	31	18%	7	11%	9	20%
>=5 en <=10 years	43	6%	13	3%	9	6%	21	11%
>10 years	5	4%	5	5%	0	0%	0	0%

Stunting children per gender								
Boy	57	60%	28	57%	11	69%	18	60%
Girl	38	40%	21	43%	5	31%	12	40%

Table 6: Prevalence of weight/length at or under P3 (wasting) per geographical location by age and gender

	Total		**St. Scholastica (Mulina)**		**Tuwani (Donkerhoek)**		**Muila**	
	1220		**Total= 725**		**Total= 253**		**Total= 242**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Wasting	17	1%	9	1%	5	2%	3	1%
No wasting	618	51%	349	48%	116	46%	153	63%
Unknown	585	48%	367	51%	132	52%	86	36%
Wasting children per age								
<=1 year	0	0%	0	0%	0	0%	0	0%
>1 en <5 years	6	3%	4	3%	2	5%	0	0%
<5 years	6	2%	4	2%	2	3%	0	0%
>=5 en <=10 years	11	3%	5	3%	3	5%	3	3%
>10 years	0	0%	0	0%	0	0%	0	0%
Wasting children per gender								
Boy	8	47%	5	56%	2	40%	1	33%
Girl	9	53%	4	44%	3	60%	2	67%

Anaemia

28% of the checked children were suffering from anaemia and 3 children had severe anaemia (Hb < 5 mmol). Highest prevalence of anaemia was seen in Mulina (32%).

Anaemia is a condition in which the number of red blood cells or the hemoglobin concentration within them is lower than normal. Hemoglobin is needed to carry oxygen and if you have too few or abnormal red blood cells, or not enough hemoglobin, there will be a decreased capacity of the blood to carry oxygen to the body's tissues. This results in symptoms such as fatigue, weakness, dizziness and shortness of breath, among others. The most common causes of anaemia include nutritional deficiencies, particularly iron deficiency, but also deficiencies in folate, vitamins B12 and A are also important causes. Furthermore, infectious diseases as malaria, tuberculosis, HIV and parasitic infections are common causes. Iron

deficiency anaemia has also been shown to affect cognitive and physical development in children and reduce productivity in adults.

Anaemia is an indicator of both poor nutrition and poor health. It is problematic on its own, but it can also impact other global nutritional concerns such as stunting, wasting, low birth weight and has a negative influence on brain development. School performance in children and reduced work productivity in adults due to anaemia can have a further negative impact on social and economic outcomes for both the individual and family.

Table 7: Prevalence of anaemia per geographical location by age and gender

	Total		**St. Scholastica (Mulina)**		**Tuwani (Donkerhoek)**		**Muila**	
	1220		**Total= 725**		**Total= 253**		**Total= 242**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Anaemia	344	28%	229	32%	69	27%	46	19%
No anaemia	778	64%	487	67%	136	54%	155	64%
Unknown	98	8%	9	1%	48	19%	41	17%
Hb <5,0 mmol	6	1%	4	1%	1	0%	1	0%
Anaemia per age								
<=1 year	25	32%	12	36%	9	38%	4	19%
>1 en <5 years	56	28%	42	31%	10	27%	4	16%
<5 years	84	29%	57	32%	19	31%	8	17%
>=5 en <=10 years	210	27%	133	31%	39	27%	38	19%
>10 years	50	29%	39	32%	11	23%	0	0%
Anaemia per gender								
Boy	179	52%	115	50%	38	55%	26	57%
Girl	160	47%	110	48%	30	43%	20	43%

Deworming

Of all children seen during the medical camp, only 10% had received a deworming treatment in the last 6 months prior to the check. Antiworm drugs were out of stock for the governmental program in the province Limpopo from march 23 onwards. Albendazole is used to manage most infections caused by roundworms and is the drug of choice for ascariasis, trichuriasis, trichinosis, cutaneous larva migrans, hookworm, and pinworm infections. RDL pharmacies was able to assist MCC with the supply of enough antiworm tablets for both prevention and treatment of acute worm infection in all children seen (treatment only given to children above 2 years of age).

The presence of intestinal parasites in a population is indicative of lack of proper sanitation, low economic standards and poor educational background. The parasite consumes the nutrients from the children they infect and worsens malnutrition and limits the physical development. There is a strong relationship between a parasitic worm infection and anemia. The parasitic infection can also cause abdominal pain, diarrhea, intestinal obstruction and various other health problems. Prolonged infection affects growth, development and educational achievements.

MCC provided deworming treatment to all children above 2 year of age, and who did not receive deworming treatment in the last 6 month. In total deworming treatment was provided to 978 children. Furthermore, during the medical camp special attention was given to provide education on hand hygiene to prevent future worm infections using the information developed in cooperation with Aisha & Friends.

Table 8: Prevalence preventive anti-worm treatment in the last half-year per geographical location by age and gender

	Total		**St. Scholastica (Mulina)**		**Tuwani (Donkerhoek)**		**Muila**	
	1220		**Total= 725**		**Total= 253**		**Total= 242**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Anti-worm	10	1%	10	1%	0	0%	0	0%
No anti-worm	1210	99%	715	99%	253	100%	242	100%
Anti-worm per age								
<=1 year	0	0%	0	0%	0	0%	0	0%
>1 en <5 years	4	2%	4	3%	0	0%	0	0%
<5 years	4	1%	4	2%	0	0%	0	0%
>=5 en <=10 years	5	1%	5	1%	0	0%	0	0%
>10 years	1	1%	1	1%	0	0%	0	0%

Skin problems

Skin conditions contribute significantly to the global burden of diseases and are among the leading causes of non-fatal disease burden. Children living in rural areas with poverty are vulnerable to several conditions including dermatological disorders, and there is limited data on the burden of these conditions among children in Limpopo area.

The most encountered skin problem was ringworm of the scalp area, or tinea capitis, which is a fungal infection that can spread easily in families, crowded spaces and schools if poor infection control measures are being used. We could feel the stigma of ringworm infection and had to deny the request of parents for treatment for themselves, which falls out of our MCC medication program. Treatment usually requires taking prescription anti-fungal medications for two to three months with ketoconazole shampoo or itraconazol.

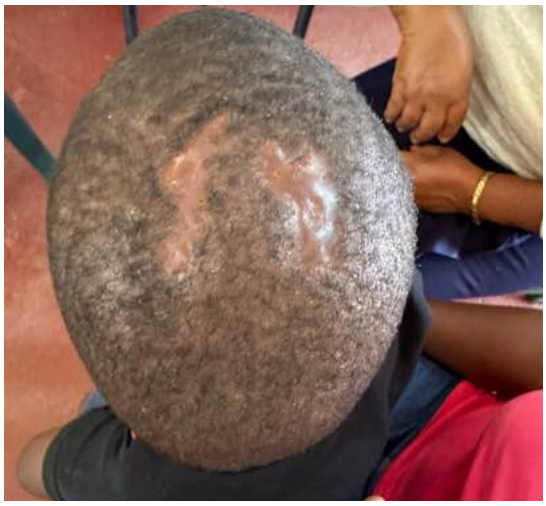

Figure 7 and 8: examples of scarring after fungal infections.

Eye problems

Eye allergies are surprisingly common in children in South Africa and unfortunately, this phenomenon appears to be increasing. Allergic conjunctivitis is the inflammation of the conjunctiva (caused by hypersensitivity type I reaction) due to the immune response to allergens. Vernal (springtime) keratoconjunctivitis (VKC) is a chronic bilateral inflammation of the conjunctiva/cornea which is manifested by the presence of giant/cobblestone papillae at the tarsus/limbus. VKC often affects normal activities such as playing and attending school. It is a severe form of allergy in warm and dry tropical and sub-tropical countries. Numerous patients experience an exacerbation of VKC during spring season. In the absence of proper management, around 5% of VKC patients will suffer from visual impairment.

During the medical checks we diagnosed 36 children with vernal keratoconjunctivitis and treated them with corticosteroid eyedrops. Most common symptoms and complaints were itchy eyes with frequent rubbing, increased tearing, red and pink eyes, and darkened discoloration of the skin under the eye. We are not sure which allergens are most common in this region that cause these eye allergies; close animal contact, systemic allergy history, dust exposure, pollen, and kerosine/ wood fire and smoke exposure could all be important triggers.


Figure 9 and 10: examples of vernal keratoconjunctivitis

Dental problems

We identified 148 (12%) children with cariës, and 34 children with caries with pain, who were referred to a dentist in Elim Hospital. Professional dental care is limited in this area and is mainly aimed at treating pain. This underlies the need for a good dental program to educate children and parents on the importance of dental care. MCC was taken bij surprise by the huge stalls of candy and crisps being sold on the schoolyards and advised on the selling of healthy snacks like fruits or bars instead.

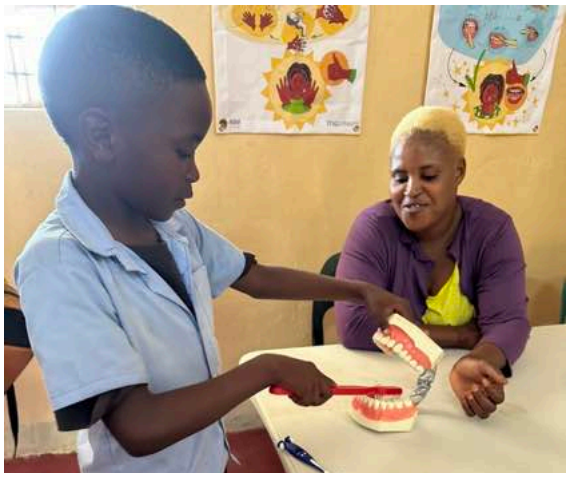
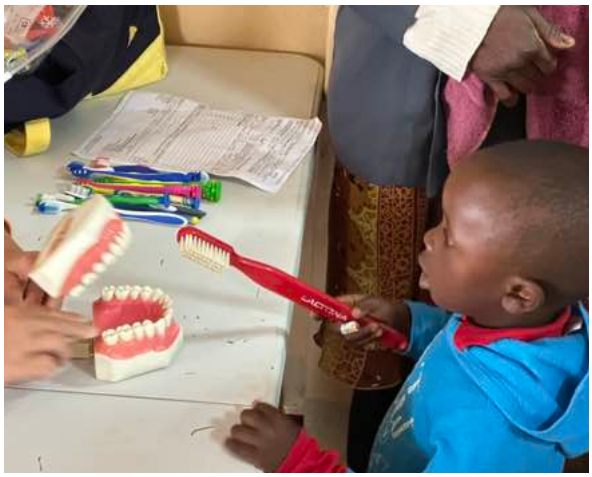

Figure 11: dental hygiene instruction with picture tools from Aisha and Friends

Figure 12: candy and crisps vendor stall behind the school

During the medical camp we provided education on dental care with picture tools from Aisha and Friends to all children, and handed out a new colorful toothbrush.

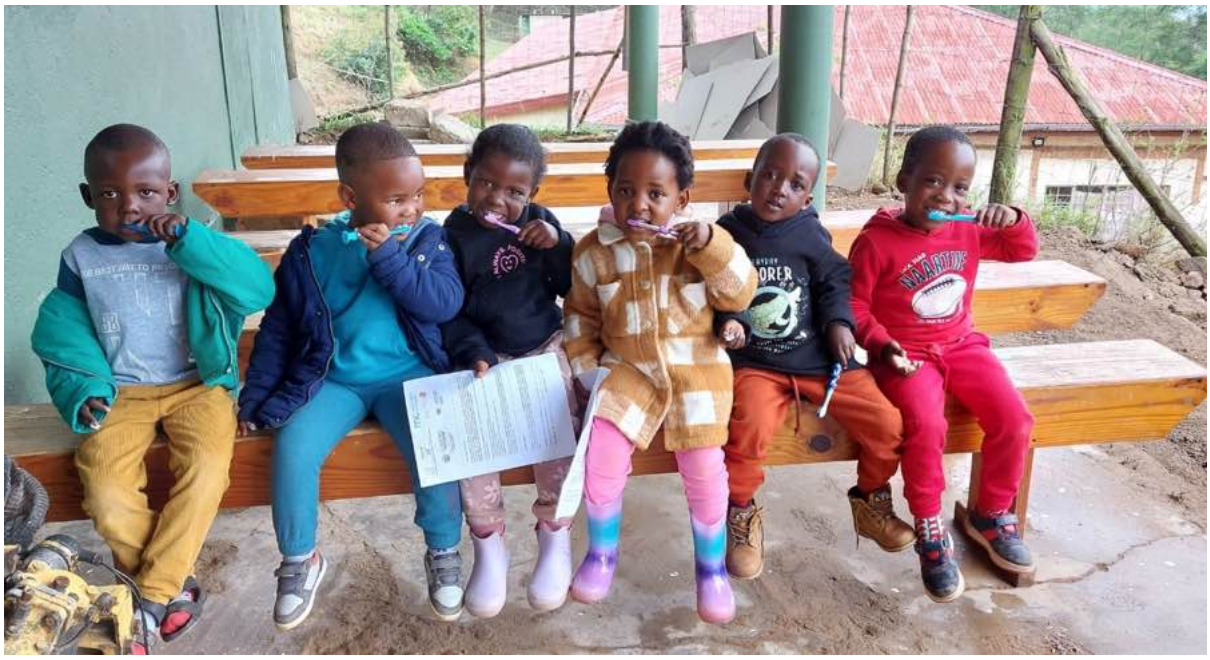

Figure 13: practice makes perfect

Childhood maltreatment

Child maltreatment is the abuse and neglect that occurs to children under 18 years of age. It includes all types of physical and/or emotional ill-treatment, sexual abuse, neglect, negligence and commercial or other exploitation, which results in actual or potential harm to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power. Exposure to intimate partner violence is also included as a form of child maltreatment.

Child maltreatment causes suffering to children and families and can have long-term consequences. Maltreatment causes stress that is associated with disruption in early brain development. Extreme stress can impair the development of the nervous and immune systems. Consequently, as adults, maltreated children are at increased risk for behavioral, physical and mental health problems such as: Perpetrating or being a victim of violence, depression, smoking, obesity, high-risk sexual behaviors, unintended pregnancy and alcohol and drug misuse.

Via these behavioral and mental health consequences, maltreatment can contribute to heart disease, cancer, suicide and sexually transmitted infections. Beyond the health and social consequences of child maltreatment, there is also an economic impact, including costs of hospitalization, mental health treatment, child welfare, and longer-term health costs.

Several poignant cases were seen on the medical check days, such as an 11-year-old girl just raped by a neighbor, four children left behind by a mother's death due to an overdose.

Apart from child, parental, relationship factors in the 22 signal cases we realize that there are several community and societal factors to be addressed; these included: high levels of unemployment or poverty, the easy availability of alcohol / drugs, rigid gender roles, poor living standards, and socioeconomic inequalities.

Referrals to hospital and special needs children

During the medical camp none of the children needed immediate hospital care, one child was treated on the spot for a huge burn wound on her leg, and two newborns were treated on the spot with anti-scabies lotions and hydrocortisone creme, and new baby clothes.

4 children were referred to the cardiologist, 4 to the eye doctor, 14 for a eye test, 2 for a hearing test, 2 to the urologist, 10 to the ENT doctor, 33 to social program, 4 to the neurologist for further diagnosis and treatment.

For the four disabled children seen with cerebral palsy, further follow-up with medication (baclofen) or special wheelchairs is being inventoried.

All the children referred to Elim Hospital hospital and other facilities will be given follow-up by Father Chris and his MAMAS team. Diagnosis and treatment will be

most probably paid for after consultation of the costs with MCC and Kinderfonds MAMAS. Father Chris and the Kurisanani St. Scholastica have done a tremendous amount of work to get everybody on the same page; nurses, MAMAS, local volunteers and MCC team members alike.

Table 9: Follow-up of all children

	Total	
	1220	
	N	**%**
Cardiologist	4	0.3%
Dentist	25	2%
Diagnostic referrals	18	1.5%
ENT doctor	10	1%
Eye doctor	4	0.3%
Follow-up on clinic or intervention	6	0.5%
International foundations	2	0.1%
Gynaecologist	1	0.1%
Hearing test	2	0.1%
Neurologist	4	0.3%
Optometrist	14	1%
Orthopedic surgeon	1	0.1%
Pediatrician	1	0.1%
Physical therapist	6	0.5%
Social program/psychologist	33	3%
Urologist	2	0.1%

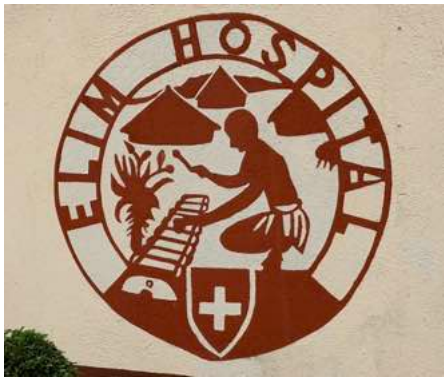

Figure 14: logo of Elim Hospital

Conclusions and recommendations

Based on the large crowds attending during the medical camp and the observations made, it seems that there is certainly a need for accessible and high-quality healthcare for children in the Tzaneen area. Several recommendations can be made for the future:

1. Deworming

In South Africa, deworming programs in the local clinics are in place, however, not all children are reached. In the Tzaneen area this year, approximately 90% of the children above the age of 1 year did not receive deworming treatment. The main reason was that the anti worm medication from the government was out of stock in the region for the last 7 months.

According to WHO large-scale deworming is the best way to reduce the suffering caused by intestinal worms. Improving basic hygiene, sanitation, health education and providing access to safe drinking-water are also keys to resolving the health and nutritional problems caused by intestinal worms.

MCC suggest that the nurses of the local clinics keep father Chris informed on the status of the availability of antiworm treatment, so that the low cost deworming program at the community schools can continue to run with possible additional funding.

2. Nutrition

Understanding children's nutritional status is important. Globally, nearly half of all deaths in children under five are caused by malnutrition. This is due to a lack of acces to sufficient and nutritious food as well as a range of other factors such as healthcare, education, sanitation and hygiene. Since 2011 South Africa works with the road to health booklet, which almost all the parents brought along to the medical camp. The Road to Health booklet is similar to growth monitoring tools and development assessments in countries around the world has the potential to help improve children's lives.

Malnourished children are more likely to contract diseases such as diarrhea, measles and other infections. These can lead to death, as well as a range of permanent mental and physical shortfalls. Few children receive nutritionally adequate and safe complementary foods; often less than a fourth of infants 6–23 months of age meet the criteria of dietary diversity and feeding frequency that are appropriate for their age.

The moderate prevalence of stunting, and anemia is considered mainly due to the limited availability (qualitative and quantitative) of nutritious food despite school lunches. Banning the candy and crisps stalls on school yards could be an important step and signal to parents for a healthy diet. Eating more fruits and vegetables is

beneficial to improve health and physical condition, aside from the issue of dental caries. However, eating habits, to encourage eating more green vegetables and fruits is not easy. MCC advises to follow the recommendations of the Green Found Food Foundation on this topic.

3. Cooperation education and healthcare

We advise to reinforce and further strengthen the coooperation between the schools and healtcare system in the tzaneen area by using the Health promoting school (HPS). The HPS is a initiative of the WHO and UNESCO in which healthy behavior is promoted from early childhood through the school setting, not only benefiting the children themselves but also their families, peers and wider communities. By using schools as a strategic platforms for delivering preventive health care services they function as a an extended arm of primary health reach large numbers of the population. Its already implemented worldwide.

4. Hygiene and dental care

In the villages and schools education materials developed by Aisha & Friends and MCC could support the efforts for better hand washing and dental hygiene.

5. Health education on ringworm

More than half of the children we monitored had some form of tinea capitis or ringworm on their skin. The tinea capitis can spread easily through close contact with an infected person or object, including equipment or blades, scissors, clippers and combs if being used on more than one family member. If left untreated, ringworm can spread to other areas, cause scarring and hair loss.

As a starting point, health information gatherings could be planned and effective cleaning and disinfection arrangements highlighted for preventing, or controlling, the spread of this fungal infections.

6. Health education on vernal kerotoconjunctivits

Options through health education for supportive interventions in the community including regular hand and face washing, staying out of the sun, keeping away from dust and smokes, and avoiding touching or rubbing of the eyes and putting cold compress to the eyes. Medical treatment in the local clinics includes artificial tears, steroidal and non-steroidal drugs with care of duration of treatment to avoid long-term use complications.

7. Special needs children

During this years medical camp 18 children were identified with disabilities, 5 physical and 13 mentally limited. We believe that a lot can be done to improve the lives of these children and to support the parents. We are very happy to learn that there is the knowledge of a Belgium program for the mentally challenged adolescents focusing more on participation within the community. Perhaps those responsible can collaborate on a mutual plan.

8. Child safety

MCC would love to work together on the checks days with one or two local social workers together with the team of Father Chris and the local nurses to be able to address the cases right on he spot. Important topics to adres in the years to come are the gender and social inequality, inadequate policies and programs to prevent child maltreatment, child pornography, child prostitution and child labour in the region. Great efforts are already made for adequate housing or social services to support families and institutions by Father Chris and Kinderfonds MAMAS, who are already screening for children high risk of Adverse Childhood Experiences (ACEs).

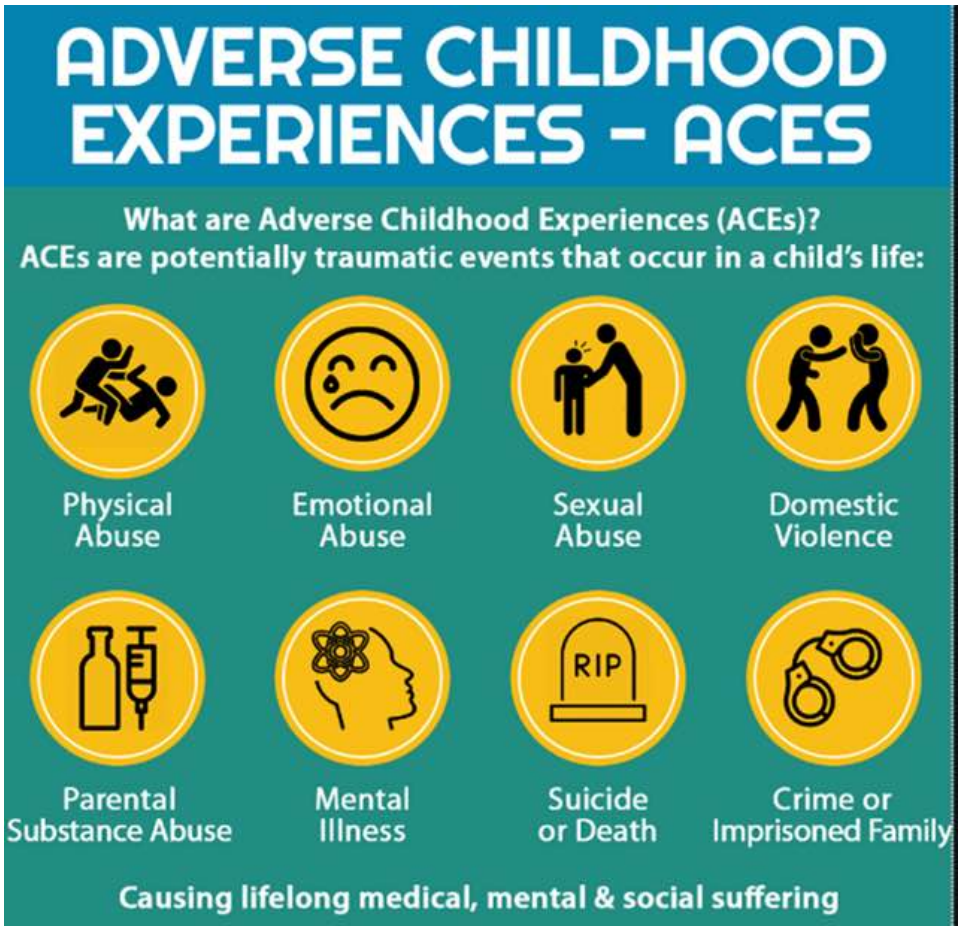

Figure 15: screening for children high risk of Adverse Childhood Experiences (ACEs) program

9. Future medical camp

MCC concludes that there is a need to continue with the medical camps in the Tzaneen area together with all the stakeholders in the expanding network (the nurses in the local clinics, school directors, the MAMAS and the staff of Father Chris). We might further discuss for which location/schools our support is most needed to benefit and organize the medical camp in the coming years. It might be good to focus on the 0-5 year olds in the Mopani district.

We are very grateful for all work performed by Father Chris and his team, the fantastic nurses, school staff and all other helpers during the medical camp in the Tzaneen area in 2023. We could not have performed our work without their presence and hard work. We are also very grateful for all the effort made by the MAMAS and Father Chris in the months prior and also after our visit to continue to support the children on their walk to a healthier future.

Ines von Rosenstiel (pediatrician) and Remco Franssen (internal medicine consultant) on behalf of the mission team.

Figure 16: MMC, the MAMAS, Father Chris, local volunteers and local nurses working together as one big family.

Appendix A

Table 10: Disease prevalence among all children per geographical location

	Total		St. Scholastica (Mulina)		Tuwani (Donkerhoek)		Muila	
	1220		Total= 725		Total= 253		Total= 242	
	N	%	n	%	n	%	n	%
Underweight	49	4%	27	4%	7	3%	15	6%
Stunting	95	8%	49	7%	16	6%	30	12%
Wasting	17	1%	9	1%	5	2%	3	1%
Anaemia	344	28%	229	32%	69	27%	46	19%
HIV pos.	5	0%	3	0%	2	1%	0	0%
Malaria (suspected)	1	0%	1	0%	0	0%	0	0%
vitamin deficit (clinical signs)	18	1%	13	2%	3	1%	2	1%
Malaria (confirmed)	1	0%	1	0%	0	0%	0	0%
syndrome n.o.s.	1	0%	1	0%	0	0%	0	0%
pneumonia (clinical)	3	0%	3	0%	0	0%	0	0%
tuberculosis (clinical)	1	0%	1	0%	0	0%	0	0%
bronchitis	4	0%	2	0%	2	1%	0	0%
BHR/asthma	10	1%	6	1%	2	1%	2	1%
Respir. Other	1	0%	1	0%	0	0%	0	0%
dysenteria	1	0%	1	0%	0	0%	0	0%
diarrhoea without dehydration	6	0%	5	1%	1	0%	0	0%
constipation	1	0%	0	0%	0	0%	1	0%
active worm infection	103	8%	56	8%	27	11%	20	8%
GI other	2	0%	0	0%	0	0%	2	1%
otitis media acuta	3	0%	2	0%	0	0%	1	0%
otitis media with effusion	11	1%	8	1%	0	0%	3	1%
otitis externa	1	0%	1	0%	0	0%	0	0%
(adeno)tonsillitis	2	0%	1	0%	1	0%	0	0%
sinusitis	2	0%	1	0%	0	0%	1	0%
hearing impairment	3	0%	1	0%	0	0%	2	1%
ENT other	28	2%	19	3%	4	2%	5	2%
cariës n.o.s.	148	12%	84	12%	42	17%	22	9%
pain n.o.s	2	0%	0	0%	1	0%	1	0%
caries with pain	34	3%	13	2%	17	7%	4	2%

	Total		St. Scholastica (Mulina)		Tuwani (Donkerhoek)		Muila	
	1220		Total= 725		Total= 253		Total= 242	
	N	%	n	%	n	%	n	%
wounds n.o.s.	4	0%	2	0%	0	0%	2	1%
eczema n.o.s.	19	2%	8	1%	9	4%	2	1%
dermatomycosis	16	1%	8	1%	4	2%	4	2%
Impetigo/furunculosis	4	0%	3	0%	1	0%	0	0%
scabies	22	2%	13	2%	6	2%	3	1%
Tinea Capitis	57	5%	28	4%	22	9%	7	3%
wounds infected,	3	0%	3	0%	0	0%	0	0%
Burn wound fresh	2	0%	2	0%	0	0%	0	0%
Skin other (psoriasis etc)	21	2%	15	2%	3	1%	3	1%
psychomotoric retardation	13	1%	10	1%	2	1%	1	0%
hypertonia	1	0%	1	0%	0	0%	0	0%
epilepsy	3	0%	2	0%	0	0%	1	0%
migraine/headache	3	0%	2	0%	1	0%	0	0%
Neuromusc other	3	0%	2	0%	1	0%	0	0%
physiological murmer	3	0%	2	0%	0	0%	1	0%
pathological murmur	2	0%	1	0%	0	0%	1	0%
Cardio other	1	0%	1	0%	0	0%	0	0%
refractory problem	10	1%	5	1%	3	1%	2	1%
strabismus	3	0%	2	0%	0	0%	1	0%
keratoconjunctivitis	36	3%	24	3%	6	2%	6	2%
amblyopia	1	0%	0	0%	1	0%	0	0%
eye other	8	1%	4	1%	3	1%	1	0%
gyn other	1	0%	0	0%	1	0%	0	0%
urogen other	2	0%	1	0%	1	0%	0	0%
chronic kidney path.	1	0%	0	0%	0	0%	1	0%
old fracture	2	0%	2	0%	0	0%	0	0%
skeletal other	4	0%	4	1%	0	0%	0	0%
hernia(umbilical etc)	5	0%	2	0%	1	0%	2	1%
abdomen other	1	0%	1	0%	0	0%	0	0%

Table 11: Treatment among all children per geographical location

	Total		St. Scholastica (Mulina)		Tuwani (Donkerhoek)		Muila	
	1220		Total= 725		Total= 253		Total= 242	
	N	%	n	%	n	%	n	%
ferro	25	2%	17	2%	3	1%	5	2%
mother iron	13	1%	10	1%	2	1%	1	0%
multivitamins	420	34%	249	34%	81	32%	90	37%
anti-worm	978	80%	581	80%	199	79%	198	82%
acute worm	119	10%	61	8%	30	12%	28	12%
anti-lice	1	0%	0	0%	1	0%	0	0%
anti-scabies	11	1%	7	1%	4	2%	0	0%
scabies soap	13	1%	8	1%	2	1%	3	1%
amoxicillin	14	1%	10	1%	0	0%	4	2%
augmentin	6	0%	3	0%	0	0%	3	1%
2e lijns antibiotica	2	0%	1	0%	1	0%	0	0%
malaria treatment	1	0%	0	0%	1	0%	0	0%
ivermectine for lice	7	1%	3	0%	0	0%	4	2%
paracetamol	21	2%	10	1%	8	3%	3	1%
inhaler	5	0%	2	0%	2	1%	1	0%
ceftriaxon	1	0%	0	0%	1	0%	0	0%
ORS	1	0%	0	0%	0	0%	1	0%
eardrops	4	0%	4	1%	0	0%	0	0%
mupirocine=Bactroban	4	0%	2	0%	0	0%	2	1%
hydrocortisone cream	21	2%	8	1%	10	4%	3	1%
dactarin cream	57	5%	28	4%	20	8%	9	4%
fusidin cream	2	0%	2	0%	0	0%	0	0%
neutral cream	8	1%	8	1%	0	0%	0	0%
griseofulvine	9	1%	7	1%	2	1%	0	0%
eyedrops	24	2%	13	2%	5	2%	6	2%