

Introduction

In the second week of November 2010, from 6th till 13th, an international team of Medical Checks For Children visited Kathmandu Valley and checked 1425 children aged “newborn” till 12 years (in Jalupa school and Swarga a few were older, till 21 years) free of cost.

There were two teams, containing volunteers from three different countries, and from three different organizations; one team consisted of Dutch (MCC) and Germans (Bal-Balika), one team consisted of Dutch (MCC) and English (C.H.A.N.C.E for Nepal) people.

Dutch participants: Ines Von Rosentiel, (pediatrician and Chair MMC), Pieter Bot (cardiologist, in training), Ans van Breukelen (primary care pediatrician), Maaïke van der Heide (pediatrician), Romée Lambrechtsen (medical trainee), Ada Nieuwendijk (photographer), Antoinette Nieuwendijk (psychiatrist), Joost Overgaauw (general practitioner), Nielske M. Weggelaar (pediatrician).

German participants: Inge Mewes (medical doctor), Susanne Frese-Buthmann, (eye doctor), Wolfgang Buthmann (lawyer), Stefan Redlich (pharmacology manager), Stefanie Paffrath, (art restaurator), Marika Guillaume, (housewife), Dirk Volkmann, (consultant), Susanne Volkmann, (medical-technical assistant, chair and founder of Bal Balika)

English participants: Barbara Datson (Psychotherapist and Fund Raiser and founder of - C.H.A.N.C.E for NEPAL), Trisha Espin (dentist), Qamarun Nisa (technical services manager), Rebecca Davies (housewife)

Technical equipment and dental instruments from MCC and some of the supplies (like for example toothbrushes and soap) were brought in by the volunteers. Most of the medication was ordered through Prakash Bhatta in Kathmandu at a local wholesaler.

The local cooperation with Prakash Bhatta, Martine and Lobsang, owners of the Valley Guest House in Kathmandu, the women’s project in Shresta, Joyce from the Suvadra orphanage, Lama kondon and all the teachers and board members of the visited schools consisted of the following (amongst others):

- Providing facilitating board and lodging of all MCC team members.
- Transportation of the MCC team to the diverse check locations in and around Kathmandu.
- Prior announcement of the medical camp in the locations.
- Ordering and delivery of medications.
- Giving support to the MCC team during the medical camp.

In total the multidisciplinary group consisted of 21 team members to perform the children’s medical health campaign.

The MCC team was very satisfied with the cooperation with all the people in Kathmandu and the active, direct support and enthusiasm of the local volunteers who gave MCC the opportunity to work in Nepal and to facilitate all aspects of the medical camp. Special thanks go to the older students and school teenage translators we had the privilege to work with during the week. We hope they will continue to inspire their communities in the same way they inspired us as they play a vital role in spreading awareness and knowledge about child health and hygiene.

We are grateful to all the care takers and community people for bringing the children and helping to conduct the program. We are happy we got the opportunity to work with and to learn from all volunteers, translators and other supporting members who have helped directly or indirectly, despite their own obligations.

And last but not least, we would like to thank the children and their care-takers who came to the check for their inspiring presence.

Medical Checks for Children per location

Table 1: Place of stay and number of checked children per date

Date	Place	Number of Children
6/11	Orphanage Valley Guesthouse Marinka Home	33
7/11	Free (Nepali festival)	
8/11	Hattiban Clinic	132
9/11	Suvadra orphanage(Swarga) + Bhakdapur Village	263
10/11	“Womens Project” Shresta Darmasthali	260
11/11 Team Susanne	Jalupa School	193
11/11 Team Barbara	Green Hill Academy	154
12/11 and 13/11	Triple Gem School	390
Total		1425

During the free of costs medical checks, the children were checked following the MCC carousel:

1. Registration of the child
2. Measuring height and weight (saturation occasionally)
3. Blood test (haemoglobin)
4. Physical examination
5. Giving medication (pharmacy)
6. Education on tooth brushing (a tooth brush was given to each child), and hand washing.

Data collection

Anthropometric measurements were recorded, and a finger prick sample was taken for determination of the haemoglobin (Hb) concentration. . Each child was examined by a clinical officer. Specifically, caretakers were asked if the child had diarrhoea, an upper respiratory infection, vomiting, eating soil (pica), decreased appetite, weight loss or malaria. They were also asked if their child received treatment for any of these or worm treatment, and if so, when. The data of 1425 children were analysed for a daily quick scan of children’s health on location.

Diagnosis and categories of ailments:

During the week, MCC checked 1423 children and 2 psychomotor-retarded people older than 18 years. The major problems were anemia (424 (30%) children) and dental problems (419 (30%) children).

The most frequently observed clinical abnormality was dermatomycosis (16,5% of the children) and

46 (4%) of the children suffered from pyodermatosis; scabies, impetigo and/or lice.

Hypertrophy of the mandibular nodes was seen in most of the children, mainly due to dental problems or upper airway tract infections.

Finally, among the children examined 656 (46)% were free of clinically detectable disease, 546 (38,4%) children received multivitamin treatment because of clinical suspicion of a deficiency, 9 children were referred to a specialist in a hospital of whom one child because of more severe illness, requiring prompt medical treatment (suspicion of metabolic disease) and one child with a severe heart disease (who had heart-surgery already but was in need of further treatment) (table 3).

The overall health and nutritional status of the children was moderately poor, with **31.5% of stunting** and **29.9% of anaemia**. Due to the high risk of mortality and morbidity under five years of age, the focus of MCC is on checking vulnerable young children. Of all checked children, 80.9% were ten years of age or younger and 30,5 % of the children were five years of age or younger (table 2).

Thanks to the dentist joining our team, most dental problems could be managed on the spot by extracting teeth and/or treatment with antibiotics. Since as much as 30% of the children suffered from caries and/or gum disease, this was a huge instant contribution to the health of the children.

Table 2: Age and gender distribution of checked children, total and per area. Figures represent absolute numbers with percentage of children in the area between brackets.

Age category and sexe	Mari nka Home		Hatt iban Clinic		Sw arg a		Dar ma sth ali		G r e e n Hills Academy		Jal up a school		Trip le Gem		Tota l	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	N	%
>=0 and <1	0	0%	2	2%	9	3%	8	3%	0	0%	3	2%	1	0%	23	2%
>=1 and <5	0	0%	25	19%	49	19%	69	27%	16	10%	28	15%	95	24%	282	20%
>=5 and <12	24	73%	83	63%	168	64%	163	63%	110	71%	158	82%	248	64%	954	67%
>=12 and <18	9	27%	22	17%	33	13%	20	8%	28	18%	4	2%	46	12%	162	11%
Boy	19	58%	62	47%	126	48%	137	53%	77	50%	91	47%	194	50%	706	50%
Girl	14	42%	70	53%	134	51%	123	47%	77	50%	101	52%	196	50%	715	50%
Total	33	100%	132	100%	261	100%	260	100%	154	100%	193	100%	390	100%	1425	100%

Table 3: Diagnosed diseases at different locations

LOCATION	M ari nk a H o m e	Hatti ban Clini c	Swar ga	Darm astha li	Green Hills Acade my	Jalu pa scho ol	Triple Gem	Total
	n %	n %	n %	n %	n %	n %	n %	n %
Total nr of children	33	132	261	260	154	193	390	1425
Anemia	11 33 %	34 26 %	56 22 %	78 30 %	56 37 %	51 27 %	138 35 %	424 30 %
Pneumonia (clinical diagnosis)	0 0%	0 0 %	2 1 %	5 2%	0 0%	1 1%	1 0%	9 1%
Bronchitis	0 0%	3 2 %	1 0 %	3 1%	1 1%	1 1%	1 0%	10 1%
Active worm infection	0 0%	0 0 %	1 0 %	1 0%	0 0%	0 0%	4 1%	6 0%
Otitis media with effusion	0 0%	0 0 %	2 1 %	2 1%	1 1%	1 1%	3 1%	9 1%
Otitis externa	0 0%	2 2 %	1 0 %	2 1%	0 0%	1 1%	1 0%	7 0%
Caries n.o.s.	5 15 %	25 19 %	50 19 %	33 13 %	32 21 %	35 8%	84 22 %	264 19 %
Caries with pain	0 0%	16 12 %	25 10 %	22 8%	21 14 %	27 14 %	44 11 %	155 11 %
Eczema n.o.s.	0 0%	0 0 %	1 0 %	6 2%	0 0%	1 1%	3 1%	11 1%
Dermatomycosis	0 0%	25 19 %	44 17 %	54 21 %	19 12 %	33 17 %	60 15 %	235 16 %
Impetigo / furunculosis	0 0%	1 1 %	0 0 %	2 1%	0 0%	2 1%	6 2%	11 1%
Lice	0 0%	7 5 %	2 1 %	8 3%	0 0%	3 2%	5 1%	25 2%
Scabies	0 0%	0 0 %	2 1 %	1 0%	0 0%	2 1%	5 1%	10 1%
Physiological murmur	0 0%	0 0 %	3 1 %	1 0%	0 0%	2 1%	0 0%	6 0%
Pathological murmur (suspected)	0 0%	0 0 %	0 0 %	0 0%	0 0%	0 0%	3 1%	3 0%
Refractory problems	0 0%	0 0 %	2 1 %	0 0%	0 0%	0 0%	0 0%	2 0%
Strabismus	0 0%	0 0 %	2 1 %	0 0%	0 0%	0 0%	0 0%	2 0%

Table 4 : Prevalence of selected treatments

	Total (n= 142 5)
	n %

Ferro	125 9	88%
Mother iron	6	0.4 %
Multivitamins	546	38%
Preventive antiworm treatment	980	69%
Ivermectine (scabies treatment)	9	1%
Amoxicilline	35	2%
Eardrops	9	1%
Hydrocortison cream	14	1%
Dactarin cream	8	1%
Dactacort cream	6	0.4 %
Fusidin cream	20	1%

1. Growth abnormality and malnutrition

(underweight: 21% wasting: 4% stunting: 32%)

Malnutrition has been related to poor cognitive and school performance. There is strong evidence to suggest that malnutrition places children under the age of 5 at increased risk for mortality.

Our anthropometric indices are presented for 1425 children. The prevalence of stunting, wasting and being underweight was 32%, 4% and 21% respectively.

In 2006 the WHO Global Database on Child Growth and Malnutrition described an urban cohort of 643 Nepalese children under the age of 5 years. In this cohort, prevalence's of 36,3% stunting, 7,5% wasting and 23,2% being underweight are reported. This is quite comparable with our results in Kathmandu region.

Percentages of growth retardation are correlated with poverty, malnutrition, living conditions, hygiene and the prevalence of chronic diseases. The major causes of malnutrition are poor feeding practices due to either lack of food or inadequate childcare. Adequate food intake and education programs addressing nutritious food need to be provided.

Malnutrition is thought to account for one third of all deaths of children under five years of age (UN Millennium Developmental Goals). Therefore, we assessed growth abnormalities, 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 (acute) 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 chronic 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.

It has to be noted that reference data were only available for certain heights, weights and ages (as specified above), leading to the following general prevalence's of growth abnormalities in Kathmandu:

Table 5: Summary of growth abnormalities per geographical location

Growth abnormality	Marinka Home	Hattiban Clinic	Swarga	Darmasthali	Green Hills Academy	Jalupa school	Triple Gem	Total
	n/N %	n/N %	n/N %	n/N %	n/N %	n/N %	n/N %	n/N %
Underweight (Weight/age < P3)	3/27 11%	21/102 21%	57/198 29%	52/227 23%	43/114 38%	21/181 12%	51/312 16%	248/1163 21%
Stunting (Height/age < P3)	6/33 18%	24/131 18%	128/256 50%	90/258 35%	54/154 35%	72/192 38%	73/387 19%	447/1413 32%
Wasting (Weight/height < P3)	1/17 6%	6/67 9%	2/166 1%	10/181 6%	4/75 5%	4/137 3%	8/237 3%	35/882 4%

Percentages of stunting indicating moderate to severe growth retardation is correlated with poor living conditions, showing higher prevalence in poor squatters and street children versus rural and urban children in middle class schoolchildren.

During clinical assessment of the children checked by MCC main parameters of malnutrition were skin, hair, nails, month, subcutaneous tissue, muscle bulk and abdomen. All the stunted children were managed by correcting possible nutritional deficiencies by a three months multivitamin treatment, next to counseling of the care giver regarding child nutrition and possible parasite infections with secondary gut damage.

Poor growth status is an indicator of inappropriate living conditions and a poor environment. In Nepal children have a high prevalence of growth retardation in both rural areas and among the urban population.

Most studies relate growth faltering to either food intake or infection (also malabsorption due to Giardia Lamblia infection). Therefore, during the medical check-ups, we paid special attention to issues of hygiene

and nutritional advice. We emphasized on hand-washing, vitamin C, fruit and green vegetable intake, so their children may grow healthy and strong. We noticed the policy of a lot of mothers to feed their babies up to the age of one year or even more, solely only with breast milk. For babies, we advised exclusive breastfeeding up to six months and then start with the introduction of additional food.

2: Anaemia

Anaemia is the most prevalent micronutrient disorder (see table 4). Prevalence of anaemia in the villages MCC checked, was high 424 (30%) and largely attributable to poor dietary quality (diets low in key nutrients) and presumably worm infections. The children were treated with iron supplements, and if still breastfed we treated the mothers, for three months. If there were other signs of malnutrition (dry, scarce skin, thin, discolored hair, month/ lip chaps) we preferably gave the children multivitamins and not just supplementation.

3: Worm treatment prophylactic, or therapeutic

Presumably because most places MCC went this year took part in the national de-worming program, we did not see many active worm infections. Almost a third of the children had received anti-worm treatment over the last 6 months which is a great improvement compared to former times MCC visited the above mentioned places (when 100% of the children got worm treatment on the spot). Still 974 (68%) children were given anti-worm treatment on a prophylactic base and 6 therapeutically.

4: Pneumonia or respiratory tract diseases

Only 9 (0,6%) children with an acute respiratory tract infection (ARI) clinically caused by bacteria were seen and treated with appropriate antimicrobials and home treatment advice. Upper airway tract infections caused by viruses ("common cold") were seen very frequently but not always registered since signs of common cold are so frequent amongst young children and most of the time of no clinical importance.

5: Cardiac murmurs

The MCC carousel also includes a cardiac examination. We suspected 3 children of having a pathological heart murmur, who needed referral to a specialist in the Heart Hospital in Kathmandu. One child already had been in the hospital for a complex heart disease, but was no longer under control. We advised him to continue medical checks in the hospital. These children will participate in the cardiac program follow up funded by the Nieuwendijk foundation within MCC.

To the children with suspected pathological heart murmurs and their care takers we stressed on teeth brushing procedures. Besides this, they were told to give their child antibiotics when going to a dentist for a teeth extraction.

6: Skin diseases

In respect to skin diseases we saw some children with infected wounds, pyoderma, tinea capitis, viral skin disorders (mainly molluscum contagiosum) dermatitis reactions due to insect bites, 25 (2%) with pediculosis capitis (lice), and 10 (1%) scabies with or without secondary infections.

Antifungal cream (eventually in combination with hydrocortison) was given for fungal infections (dermatomycosis) and hydrocortison crème was given for different forms of dermatitis.

7: Eye problems

There was an eye doctor in the team. She checked many children because they, or their care takers experienced blurred vision, but overall the vision was surprisingly well. There were 2 children with strabismus and 2 children with refractory problems. So overall it turned out that main occupation of the eye-doctor was to investigate and reassure the children or the parents that the vision was normal or already corrected sufficiently with spectacles. A lot of children complained about dry eyes (xerophthalmia), which can be a symptom of Vitamin A deficiency.

8: Dental

In general a high caries prevalence in Nepali children was found; caries with no pain: 264 (19%), caries with pain 155 (11%). No fillings were encountered.

Fortunately this MCC mission to Nepal did include a dentist. She helped as many children possible, but the condition of the teeth was generally very poor. The dentist recognized the caries as mainly caused by soft drinks, like Coca Cola (!) in combination with chewing hard food like sweets and vegetables like carrots. We stressed on dental hygiene and care to the children and their care takers and handed out teeth brushes and pasta to them.

Education health workers, caretakers and other local helpers:

One of the important tasks of MCC is to encourage the continuation of health education of the caretakers and older children. During our week we talked and taught them about common diagnoses of frequent illnesses and medication. We especially focused on anaemia and malnutrition, balanced diet, infection, parasites, and failure to thrive. Our information mainly focuses on nutritious food and vitamin supplements, as well as hygienic and health promotion issues.

Last words:

This mission to Kathmandu has been a successful one; with all energy and effort 21 great people from three different countries working together as one (or two) team(s) with the great local volunteers. All together, we could check and treat almost 1500 children, and by doing this these children may grow up in a better health and hopefully will take good care of their own children in the future. In all her simplicity, MCC contributes to the children of tomorrow.

Personal note from the report writers as medical doctors

We found it very instructive to work together with people, (with medical background or not) from Germany and England. It was a privilege to be with people who really care and to be together as one. Special thanks we would to address to Prakash Bhatta for organizing the MCC checks in the field and to Martine, Lobsang and the staff, who nourished us and made a home for us in there Valley Guesthouse.

It was interesting to see how the children in many aspects did not differ so much from European children for example in having common colds, but also in having eating and sleeping problems, quarrel and have fun. We even encountered a teenager with psychosomatic complains.

We found a remarkable difference in how patient and disciplined the Nepali children (most of the times) were while waiting for their turn to be checked. We were touched by the fact how, in general, happy they appeared with the few materials and games they possessed, and how well they took care of each other.

In this aspect the Nepali children may, in a way, be more fortunate than some children in our well developed rich countries.

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