

The Outcomes Of Dentaids' Equipment Donation Programme



Sucharita Nanjappa, BDS, MSc. & Ray Croucher, BSc , MA , PhD.

Dental Public Health
Institute of Dentistry
St. Bartholomew's and The Royal London
School of Medicine and Dentistry
Queen Mary, University of London

December 2007

1. Introduction

This report summarises the results of a wider study which focused on dental non-governmental organization (NGO) activity. There is limited published literature on dental NGOs, including any assessments of the outcome of equipment donation upon the activity of a recipient project. The report specifically reports the outcomes of donating refurbished dental equipment to dental NGOs working in developing countries using a modified questionnaire originally drafted by one UK based dental NGO, Dentaaid.

Dentaaid is a UK registered charity which has the mission to improve the oral health of disadvantaged communities around the world. One of their strategies is to provide new and refurbished dental equipment to charitable and government clinics. Dentaaid has helped to establish almost 200 charitable dental clinics in over 50 countries.

Data to inform the report was collected by self-complete questionnaire. An original Dentaaid draft was expanded to incorporate additional questions based on the quality assurance frameworks of Donabedian and Maxwell. The questionnaire comprised predominantly close-ended questions with one additional open-ended question allowing free comment (Appendix 1). It was circulated to a list of 61 dental NGOs who had validated e-mail contacts. Standard procedures were adopted to encourage responses, including an introductory letter, the distribution of the questionnaire with an information letter and two separate reminders. Non responding institutions were also telephoned. The returned data was analysed using SPSS statistical software. In many analyses the distribution of responses precluded the valid use of statistical tests.

Following advice offered by Dentaaid the analysis included a comparison of responses before and after 2004. Around this time Dentaaid amended its donation policy to make available a more comprehensive package of support to include oral health promotion, advocacy and capacity building.

Thirty two responses were received from the 61 dental NGOs to whom the questionnaire was distributed, a response rate of 53%. Of these 13 settings had received equipment pre- 2004 whilst 17 had received equipment post-2004. It was not possible to identify when equipment had been received in two cases. The post-2004 equipment recipients were more likely from Africa.

2. Results

2.1 Efficiency and effectiveness of the donated equipment

“.....equipment has been of immense use...good quality and reliable...” (Study participant.)

Table 1 - The efficiency and effectiveness of the donated equipment.

Efficiency & Effectiveness	Percentage
Equipment from Dentaaid arrived undamaged	93.8
Assembly instructions clear and helpful	93.5
Operating instructions clear and helpful	93.8
Maintenance manual included with equipment helpful in maintaining equipment	80.0
No operating problems with equipment after it was assembled	62.5
Organization has access to engineers	78.1
Equipment found to be reliable	81.3
Necessary to replace/repair some items of equipment	59.4
Almost all the equipment used often	62.1
Clinic not profitable	76.7

Table 1 describes responses to questions about the efficiency of the donation process and effectiveness of the donation programme. It shows that:

- Expectations of the donated equipment were low. Eighty one percent of respondents reported that the quality of the donated equipment was much better or better than their previous equipment and sixty percent reported that it was much better or better than what they were expecting.
- Nearly all (94%) of the respondents reported that the equipment arrived undamaged. Reports of damage included broken filter and filter fitment on the compressor, cracks in the casings of the x-ray developer and an autoclave’s damaged electronic circuit.
- A similar percentage of respondents found the assembling and operating instructions which were supplied with the equipment clear and helpful.
- Eighty percent of the respondents found the manual supplied with the equipment very helpful.
- Some respondents (38%) experienced operating problems with the equipment once it was assembled. The problems included: non working autoclave and problems with its electronic circuit, low pressure in suction unit, no water flowing through the handpiece, old handpiece with worn bearings, problems with the compressor, fused lamps, fused transformers, non working x-ray developer, x-ray machine that stopped working after a couple of uses, broken ultrasonic scaler , scaler that worked only for a short period of time and ill fitting switches (those used to alter patient posture) on the chair.
- Only one respondent reported that the equipment received was unreliable.
- Three quarters (76%) of the respondents reported access to persons who would maintain and repair the equipment. Those who did not reported that they would “head hunt” or “borrow” from medical centers or the dentists and assistants themselves would carry out repairs.
- Half of the respondents had to repair/replace parts of the equipment. These included: tubing for dental chair hydraulics, the aspirator motor, the handpiece , a hanging

motor handpiece, X-ray head and switch, X-ray control box, delivery unit pressure gauge, compressor, autoclave heating element, autoclave, light, delivery cart regulator/filter block, chair electrics, fuses and transformers, ultrasonic scaler, and operating switches. One respondent replaced all items after 2 years. The spares were reportedly sourced from Dentaid or locally.

- The equipment reportedly used least often were the X-ray machine, ultrasonic scaler, ultrasonic-cleaning bath, specialized instruments, amalgamator and the nurses stool.
- Funding was obtained from a combination of sources, with sixty five percent reporting using a combination of internal and external (donor agency) sources and the remaining thirty five percent reported funding from a combination of internal sources (fees from patients, insurance schemes, donations from within the country or government aid).
- Seventy five percent of the respondents reported that their clinics did not operate at a profit. The responses from the post-2004 equipment recipients were twice as likely to indicate that the clinic was not operating at a profit.

2.2 Contribution of the donated equipment to improving access, equity, acceptability and relevance to need

“...helps improve oral health of the public ...makes dental treatment more accessible, affordable and provides job...has improved access for deprived people...”

“...made it possible to set up the dental centreallows us to help more people in need....”

“...could not have afforded the necessary equipment to provide services for majority of the population without assistance” (Study participants.)

- Nearly half (44%) of respondents reported that the clinic served a larger geographic area after receiving the donated equipment whilst the rest reported no change in the size of the area served by the clinic .
- Measures of use show that eighty percent reported that the equipment was used intensively, defined as being at least 75+% operational. In response to another question two thirds (67%) of the respondents reported using the equipment for up to 20 days a month with the remainder using it for more than 20 days per month.

Table 2- Contribution of the donated equipment to improving patient access, equity, acceptability and relevance to need.

Access, Equity, Acceptability & Relevance	Percentage
Organizations that operate community oral health programmes	71.0
Needs assessment carried out prior to requesting equipment	62.5
Community involved in planning and decision making process	36.4
Local people trained as support staff	56
Community activities evaluated	50
Collaboration with other agencies	54.2
Aware/ implement BPOC	33.3

Table 2 describes the percentage of responses to questions about access, equity, acceptability and relevance of the equipment donation programme. It shows that:

- Seventy one percent of the respondents reported that they operated community oral health programmes. The main types of activities reported were: oral health education, oral hygiene instruction and tooth brushing with fluoride tooth paste and fluoride mouth rinsing programmes in schools. Two respondents reported organizing special

programmes for expectant women and mothers. Screening programmes and check ups, emergency treatment and ART programmes were carried out in schools and institutions such as mental health institutions, orphanages, refugee camps, factories, slums and rural areas. The whole community was reported as the target population with special focus on vulnerable groups such as schools and children, women’s groups, institutions and rural or deprived communities. The size of the target population was reported to range in size from a few hundred to as many as 650,000 people.

- Thirty three percent reported awareness of the concept of “Basic Package of Oral Care” (BPOC), and provided Oral Urgent Treatment (OUT), Atraumatic Restorative Treatment (ART), Affordable Fluoride Toothpaste (AFT) and Oral Health Education (OHE). There was no variation in response to this question between pre and post-2004 equipment recipients.
- Two thirds (63%) of the respondents reported assessing the needs of their population prior to requesting assistance from Dentaaid. These were more likely to be responses from post-2004 equipment recipients. One third (36%) reported involving the community in the planning and decision-making process. All the responses from pre-2004 equipment recipients indicated that they had not adopted this process. This process might involve meeting with community leaders and teachers prior to starting a programme or community representatives giving suggestions and inputs.
- Over half (56%) reported community capacity building activities, such as training the local people as support staff or to provide emergency and basic dental treatment. This included training as dental auxiliaries, in equipment maintenance, as clinic administrators, in infection control and in patient management. Dental nurses were trained to deliver oral hygiene instructions, oral health education, do simple extractions, ART and scaling. Clinical (medical) officers, health workers and teachers were trained in emergency techniques and oral health education, in delivering the Basic Package of Oral Care and to conduct school based screenings. Post-2004 equipment recipients were more likely to respond positively to this question.
- Half (50%) of the respondents reported evaluating their community activities. The evaluations were based on personal visits, using questionnaires and by local partners such as the local municipality and town council. Post-2004 equipment recipients were more likely to respond positively to this question.
- Fifty four percent reported collaboration with other agencies such as other NGOs, schools and education authorities, local media, local government and local dental schools.

Table 3- Diagnostic Procedures performed per month before and after donation of the equipment.

Diagnostic procedures	Mean number of procedures / month - equipment donation	Mean number of procedures / month - post equipment donation
Oral examinations	61.7	215.5
Biopsy	0.3	1.7
Radiographs	3.2	43.1

Table 3 reports estimates of the number of diagnostic procedures performed on an average month before and after donation of the equipment. It shows there were highly significant increases in the number of oral examinations performed and radiographs taken post donation. The difference in the number of biopsies performed was not significant.

Table 4- Frequency of treatment procedures provided per month before and after donation of the equipment.

Treatment	Mean number of procedures / month - pre equipment donation	Mean number of procedures / month - post equipment donation
Amalgam fillings	8.2	24.7
Composite fillings	10.2	23.3
ART	4.9	14.7
Sealants	4.28	8.4
Extractions	30.78	101.8
Dentures	2.1	7.9
RCT	3.2	17.3
Fracture repairs	0.5	1.9
Orthodontic treatments	0.3	2
Complicated oral surgery	0.7	2.9
Scaling	6.3	30.7

Table 4 describes estimated changes in the frequency of procedures performed before and after donation of the equipment. It suggests that there was a statistically significant increase in all the procedures carried out after receiving the donated equipment.

Specifically respondents suggested:

- Increased activity was more likely reported with respect to amalgam fillings, extractions, composite fillings and scaling.
- No change of activity was more likely reported with respect to ART, sealants, provision of dentures, root canal treatment, fracture repairs, orthodontic treatment and complicated oral surgery.

Little variation in activity pre and post equipment donation was identified when timing (pre/post-2004) of the donation was analysed. A reduction in the number of referrals after receiving the equipment donation and an increase in the number of examinations were identified in the post-2004 recipients.

2.3 Requests for future Dentaaid assistance

“...need to improve back up/follow up...provides an opportunity to demonstrate practical models in dental public health.....” (Study participant.)

The respondents requested the following future assistance from Dentaaid:

- Nearly all (84%) would hope to receive further donations of equipment.
- Three quarters (74%) requested educational materials for use with their clinic populations. Post-2004 equipment recipients were twice as likely as pre-2004 equipment recipients to ask for this assistance.
- Two thirds (68%) requested information on community oral health, training on community oral health and training manuals.
- Just over half (58%) requested dental engineer maintenance courses.

3. Study Limitations

A cross sectional study design was utilized, from which a hypothesis can only be generated but not tested. The low response rate reduced the power of the study, preventing demonstration of statistical associations. Low response was primarily a result of not having access to correct e-mail addresses, telephone numbers and contact persons. There were indications of variation in response depending upon the time of the equipment donation. It is not surprising that there were apparently better response levels from the post-2004 equipment recipients as reliable access was probably more likely. Another reason for the poor response appeared to be language, as the questionnaire was supplied in English only.

4. Implications for Dentaïd

This evaluation has focused on only one aspect – equipment donation - of the now more comprehensive approach - oral health promotion, capacity building, advocacy and campaigning work - adopted by Dentaïd. It offers support for the literature finding that a clinical approach is used by most NGOs to address the needs of the communities they serve. There was limited collaboration with other organizations reported, suggesting that recipients were more likely stand alone rather than integrate with other projects. Furthermore, there was no indication that increased clinic activity was built on current evidence based principles. Many respondents displayed a restricted potential to sustain their activities, especially those receiving equipment donations after 2004.

- The sub-optimal response rate, generated in part by inadequate records, has highlighted the need for Dentaïd staff to consider developing a more current and consistent system of ‘aftercare’ communication with their clients. Unprompted use of the website by recipient organizations was reported as sporadic, with less than half of the respondents reporting visiting the Dentaïd website after receipt of equipment. They were largely unaware of possible new developments in website content such as donation policy or educational resources. It should be noted that the latter resources were a common item of future assistance request.
- A key criteria for a Dentaïd equipment donation is that it should go to non-profit making facilities. Consideration of the ongoing sustainability of the facility after receiving the equipment appears limited, especially in the post-2004 equipment recipients. A key factor for consideration might be differentiating between making a (private) profit and a (mutual) surplus that can be used to support ongoing clinic activity and development, and thus encouraging self-reliance. Thought should be given to placing an increased emphasis on developing the business planning skills of equipment recipients as part of the comprehensive approach now available. Current initiatives to bulk supply equipment for the Lao national dental school appear an opportunity to develop business planning innovation.
- Focussing equipment donations by assessing the client’s ability to maintain specialized equipment and ensuring that the equipment requests accurately reflect the need of the population is important. Dentaïd staff should continue to identify ways of improving the durability of the donated equipment and ensuring that it is ‘fit for purpose’.
- Future assistance:
 - The study findings support the direction of travel for the new initiatives adopted by Dentaïd. The results show that in addition to requesting more equipment, some respondents are increasingly interested in needs assessment, educational resources,

the primary health care approach and oral health promotion strategies. Information about these subjects is available on the Dentaaid website. Given its reported infrequent use Dentaaid staff should consider identifying a range of alternative approaches to let donation recipients know that assistance in these areas is now available.

- The equipment donation programme is now being complemented with an oral health promotion component and those requesting assistance with equipment alone could be made aware of the limitations of curative approaches, the advantages of adopting BPOC to plan service provision and the longer term benefits of health promotion activities.
- A key priority might be to focus on the development of skills in evidence based dentistry. One potentially cost effective way to achieve this might be through further development of the website to include more educational resources and links to other sites in addition to the resources already placed there.
- Consideration should also be given to offering key parts of the website content in languages other than English, such as Spanish and French.

Acknowledgement: this report was made possible by the generously given support of Dentaaid. The opinions expressed within the report are those of the investigators alone.

APPENDIX 1: Questionnaire used in the study



Id Number			
Date of receipt			

1. Please answer all the questions completely
2. Do not leave any questions blank
3. To answer please put a ✓ in the chosen answer box, or follow instructions in the questions

1. Did the equipment donated from Dentaïd, arrive undamaged? (Please tick (✓) one box)

Yes		No	
-----	--	----	--

If No, please describe any damage

.....

2. Compared to your previous equipment, how would you describe the Dentaïd donated equipment? (Please tick (✓) one box)

Much Better	Better	Much the Same	Worse	Much Worse

3. Was the Dentaïd donated equipment you received of the quality that you were expecting?

(Please tick (✓) one box)

Much better than expected	Better than expected	Exactly what you expected	Worse than expected	Much worse than expected

4. Were the assembly instructions for the Dentaïd donated equipment clear and helpful?

(Please tick (✓) one box)

Yes		No	
-----	--	----	--

If No, please describe what improvements can be made to the instructions

.....

5. Were the operating instructions for the Dentaïd donated equipment clear and helpful?

(Please tick (✓) one box)

Yes		No	
-----	--	----	--

If No, please describe how improvements can be made to the instructions

.....

6. Were there any operating problems with the Dentaïd donated equipment after it was assembled?

(Please tick (√) One box)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

If Yes, please describe the problems

.....
.....

7. Have you found the Dentaïd donated equipment reliable? (Please tick (√) one box)

Reliable	<input type="checkbox"/>
Neither Reliable nor Unreliable	<input type="checkbox"/>
Unreliable	<input type="checkbox"/>

8. Does your organisation have access to engineers or people who can maintain or repair the Dentaïd donated equipment? (Please tick (√) one box)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

If the answer is 'No', please report:

- a. Who will maintain the equipment.....
- b. How the equipment will be maintained:.....

9. You received a maintenance manual with the Dentaïd equipment. Has this manual been helpful in maintaining the Dentaïd donated equipment? (Please tick (√) one box)

Very helpful	<input type="checkbox"/>
A little helpful	<input type="checkbox"/>
Not helpful	<input type="checkbox"/>

10. Has it been necessary to do any repairs or obtain any replacement parts for the Dentaïd donated equipment? (Please tick (√) one box)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

If Yes, please mention what repairs were done or which parts were replaced and where they were obtained

.....
.....

11. Please describe the current status of your Dentaïd donated equipment. (Please tick (√) one box)

Not operational	<input type="checkbox"/>
Operational: 75% +	<input type="checkbox"/>
Operational: 50 - 74%	<input type="checkbox"/>
Operational: 25 - 49%	<input type="checkbox"/>
Operational: less than 25%	<input type="checkbox"/>
Please describe any current problems:	

12. How many days a month is the Dentaïd donated equipment being used?

.....
.....

13. Please write below what items of Dentaïd donated equipment have been used most:

(Please write them in descending order of usage)

.....
.....

14. Please write below what items of Dentaïd donated equipment have been used least:

.....
.....

15. Before arrival of the Dentaïd donated equipment, how many times on average each month were the following procedures performed. Please enter your answer for each procedure, in the column on the right (e.g. 45).

Oral examinations	
Amalgam fillings	
Composite fillings	
Art fillings	
Sealants	
Teeth extractions	
Dentures (partial and/or full)	
Root canal treatment	
Repair of jaw fracture	
Orthodontic treatment	
Biopsy	
Complicated oral surgery	
Referral for advanced treatment	
Radiographs	
Scaling/ Cleaning of teeth	

16. Currently, how many times in an average month are the following procedures performed, using the Dentaaid donated equipment. Please enter your answer for each procedure, in the column on the right (e.g. 45)

Oral examinations	
Amalgam fillings	
Composite fillings	
Art fillings	
Sealants	
Teeth extractions	
Dentures (partial and/or full)	
Root canal treatment	
Repair of jaw fracture	
Orthodontic treatment	
Biopsy	
Complicated oral surgery	
Referral for advanced treatment	
Radiographs	
Scaling/ Cleaning of teeth	

17. Has there been any change in the *geographic* area that the clinic serves since the arrival of the Dentaaid donated equipment? (Please tick (√) one box)

No, same as before	
Yes, smaller than before	
Yes, larger than before	

18. How are your clinical operations funded? (Tick (√) all the answers that apply)

Fees from the patients	
Donations from within the country	
Donations from outside of the country	
Insurance scheme	
Government funded	
Other method (please specify):	

19. Please select the most appropriate statement below, which applies to your dental clinic. (Please tick (√) one box)

The clinic is profitable	
The clinic just breaks even	
The clinic is not profitable	

20. Does your organisation operate community oral health programmes? (Please tick (✓) one box)

Yes		No	
-----	--	----	--

If the answer is 'Yes', please answer all the following questions:

a) List the activities carried out in the community?

.....
.....

b) Who is the target population? (e.g. all the people living in a certain area, certain sections of society etc)

.....
.....

c) What is the age range of the target population?

.....
.....

d) What is the approximate total number of the target population?

.....
.....

e) Was any needs assessment programme carried out before requesting the Dentaaid equipment?

Yes		No	
-----	--	----	--

f) Is the community involved in the planning and decision making process of the oral health programs?

Yes		No	
-----	--	----	--

If yes, please elaborate:

.....

g) Have any of the local people been trained as support staff for the surgery or to deliver any emergency or basic treatment?

Yes		No	
-----	--	----	--

If yes please describe who was trained, by whom, length of training and duties they were trained to perform and any other addition information you can provide.....

.....
.....

h) Are the community activities evaluated?

Yes		No	
-----	--	----	--

If yes, please describe the method used:

.....

i) Do you collaborate with other agencies/organizations to promote oral health of the local population?

Yes		No	
-----	--	----	--

If yes, please describe the nature of the collaboration:

.....

j) Are you aware of the concept of 'Basic package of oral care' (BPOC)?

Yes		No	
-----	--	----	--

If you are aware of 'BOPC' and incorporate any/ all of the components in your services, please specify

.....
.....

21. How can Dentaaid be of assistance in the future? Please tick (✓) as many as you want. Also please rank (1,2,3...) them according to your priority (1= most important).

Dentaaid can further assist by providing.....	Dentaaid Assistance (Please tick (✓) as many as you want)	Rank (According to your priority. 1,2,3.....)
Equipment and supplies		
Dental engineer maintenance Course		
Education materials		
Training manuals		
Information on community/public oral health		
Training in community/public oral health		
Anything else (please specify) :		

22. In the past year has someone from your organisation visited the Dentaaid website? (please tick (✓) one box)

Yes	
No	
Don't know	

23. Please write below any further comments you have about Dentaaid's services, support and equipment.

.....
.....

Name Of Organisation:

Location (Address):

Date:

Name Of Person Filling Out Questionnaire:

Position Of Person Filling Out Questionnaire:

Date Equipment Was Received:

Thank you for your help in filling out this questionnaire you may either:

a) Take a print out and post it to me at:

Sucharita Nanjappa

C/O Department of Dental Public Health

Barts and The London Queen Mary's School of Medicine and Dentistry

Queen Mary, University of London

Turner Street

London E1 2AD

b) Download the word file for completion and return it as a word attachment to
nanjappa_s@yahoo.co.uk