

Rehabilitation services in Benghazi, Libya: An organizational case study

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Abstract

Context: Little is known about Libyan disability and rehabilitation services.

Objectives: To describe workforce characteristics of the only functioning disability rehabilitation service in 2012 Libya. This was the Benghazi Rehabilitation and Handicap Center. The focus of the case study was the physical disability services including amputee care.

Method: Organizational case study involving site visit, self-report workforce survey, and review of relevant policy, government and peak agency reports relevant to disability services.

Results: The case study revealed that disability regulations in Libya focussed on social security entitlements and impairment focussed treatment. Community based rehabilitation or initiatives for social inclusion and participation were scant, creating problems for people requiring long term rehabilitation in the community. The center workforce continued to function in spite of conflict and in difficult circumstances. While expatriate staff left in the 2011 conflict, local staff retention was high. These workers were mono-lingual, had longevity of tenure, and a lack of qualification mobility. Some such as therapists and prosthetic technicians, had highly specialised skills requiring center facilities. The case study revealed: escalating patient demand; bed-block; and problems in supplies, capital and equipment maintenance. There were opportunities to increase capacity

through: clinical and administrative staff training; development of inpatient facilities for women; discharge options for long-term male inpatients; and coordinated information systems. Of 232 eligible, n=72 staff, who participated in the survey (mean age was 39.4 years; n=40 males). Most therapists/prosthetic technicians were male; most nurses/administrative workers were female ($p=.0001$). The most common qualification across occupations was secondary school; 28.2% had intermediate secondary and 22.5% university degrees as their highest qualification. A third had been employed at the centre >20 years, >10 years and <10 years respectively. 42% worked as part of a team.

Conclusion: The study provides an insight into issues affecting disability services and revealed areas for future post-conflict workforce development and opportunities for disability service capacity building particularly in relation to coordinated information systems, qualification upgrades, in-service training, and development of inpatient discharge options including community based rehabilitation and supported accommodation.

Key words: Physical medicine and rehabilitation; health services research; disability; amputee; allied health

Introduction

Libya has growing numbers of people with disability as a result of conflict and non-conflict related causes. Conflict-related causes include historic events such as World War II and 1970s and 1980's border wars [1]. These not only resulted in immediate casualties, a legacy of explosive remnants of war (ERW) such as land mines continued to cause death and disability, most commonly amputations, in the decades that followed [1,2,3,4]. More recently the 2011 revolution and subsequent violence have left many casualties, as well as risks for further injury through endemic light arms and many more ERW [3, 5, 6]. Non-conflict related causes of disability include Libya's high motor vehicle accident rate, an increasing incidence of non-communicable disease such as cardiovascular conditions, a relatively high rate of genetic and hereditary disorders resulting from consanguineous marriage, and endemic trachoma resulting in blindness [7, 8]. In 2006 (the latest figure available), there were an estimated 160,000 to 200,000 people with disabilities in Libya [9].

People with disability from any cause in Libya need services. A framework for services was developed in 1981 when the "Law on Disabled People" was decreed [10]. This law aimed to put in place arrangements for government provision of housing, home care, education, prosthetic limbs and rehabilitation for people with disability in Libya [11, 12]. It complemented an existing 1973 Health Law that established the Public Health Code; this regulated hospitals, the practice of medical and related practitioners, public health, preventative health, therapeutic medicine, medical institutions and pharmaceuticals. A later law on disabled persons was also decreed in 1987[13].

Under these laws, almost all health services and all disability services and benefits were provided by government. Humanitarian or non-government services were not precluded, but in the mid-2000s it was the government Social Solidarity Fund and its 30+ branch committees that were responsible for services to people with disabilities[9]. In 2005, there were reported to be "three referral centers for adults with physical disability, five referral centers for children with physical disabilities, and 21 'day-time' units"[14]. Little is known about the paediatric centres or day time units. In 2007, only two referral centers were identified and these had specialised in-patient and outpatient facilities, with vocational training attached - in Tripoli and Benghazi. There did not appear to be any community based rehabilitation or supported residential care programs available and no non-government agencies were working on disability services[15]. Consequently, "physical rehabilitation services and psychosocial assistance in Libya are reportedly inadequate to meet the needs of people with disabilities" [15]. But there were reports that initiatives were being put in place by a newly established National Committee for Sponsoring those with Special Needs which met in Tripoli, to enhance disability access to employment, public places and education [15]. Around this time, workforce issues in disability services were identified: "Rehabilitation workers employed by the

government do not receive salaries to cover their cost of living. Poor awareness of disabilities, low incomes, difficult accessibility and the lack of home care and a social safety network hamper the reintegration of people with disabilities, especially economically" [9].

By the time Libya signed the Convention on Rights of people with Disability in 2008, Libya had social security provisions for people with disability that included pensions, entitlements and access to free treatment in the government rehabilitation centers [16]. Benefits were administered through the Ministry of Social Affairs. A person who had lost 80% earning capacity could get 50% of the old age pension and benefits of an additional 25% if daily functions could not be performed and attendant care was required. There were also specific schemes for people injured through landmines [9]. After the 2011 revolution, existing disability benefit schemes were supplemented with provisions specifically for people wounded in that conflict [17, 18, 19]. These special benefits included international travel, accommodation and treatment as well as higher pension entitlements. They were initially provided through the newly established Ministry of Wounded Affairs [17, 18] and then through that agency under the Ministry of Health.

After the 2011 revolution, people with disability thus had access to two different types of service. One was international, for those eligible under the Wounded Affairs program or for people who could privately pay for international care, and the other was domestic. Domestic health services were administered through the Ministry of Health or, during and after the conflict, there were also non-government humanitarian aid agencies. Domestic disability services were administered, as before, through the Ministry of Social Affairs, however the conflict meant that only one service was left functioning after 2011 - one of the two referral centers mentioned earlier, the Benghazi Rehabilitation and Handicap Center (BRHC) [20]. Apart from landmine and ERW injury prevention programs, no disability-specific humanitarian or non-government local or international aid agency service was implemented following the conflict.

Disability was identified as a humanitarian and service issue [21, 22] and in the relatively stable post-conflict environment some plans were made [23], and advocacy groups identified areas needing action [24] but the security situation has continued to deteriorate [6], impeding many plans. Development attention has been focussed on the delivery and rebuilding of emergency, hospital and primary health care [25, 26, 27, 28]. The BRHC is thus an important organisation for access to disability services in Libya.

As the only functioning disability facility in the post-2011 environment, the BRHC became the focus of this case study. In 2006 the center was described as follows [9]:

"The Benghazi Rehabilitation Center, run by the Social Solidarity Fund, is one of the two main referral centers for rehabilitation in Libya. It operates a hospital, an orthopedic

workshop, physical rehabilitation center, psychosocial support and vocational training services for people with disabilities. Renovation of the center started in 2000 following an agreement between Libya, Italy and the UN Development Programme (UNDP) and was reportedly completed in 2005. The renovation aimed to provide better services to people disabled by mines from World War II. Italy provided approximately \$7 million, which was used to train 36 technicians and equip the 120-bed rehabilitation hospital at the center. In 2005-2006, the center's organizational development and start-up was supported by the Italian Directorate for Development Cooperation. It will have a Libyan and an Italian coordinator, and 168 medical and 26 social staff. The center can assist 25-30 patients per day, but was working at 85 percent of its capacity. The lack of qualified nurses, data management, training gaps and erratic material supplies were a challenge for the center"

Since that description, much has changed but some of the asset and human resource issues identified in 2006 remain a problem today [29]. Throughout Libya, for example, there was widespread reliance on expatriate nursing and medical staff [7], with most fleeing during the revolution leaving serious workforce gaps [30]. This was one of a number of issues that was apparent in the case study. This organizational case study used a variety of data collection methods to describe functions and services at the BRHC. The case study provides an insight into issues affecting disability services in Libya, identifying potential areas for organisational and workforce development in a future post-conflict environment. The focus of the case study was physical rehabilitation.

Methods and Materials

A single site cross sectional cohort survey design was used, supplemented by field observations, and local policy and procedure documents obtained with permission from the study site. Volunteers were workers at the study site and included: nursing staff, physical therapists, prosthetic technicians and administrative staff. Staff involved in psychosocial programs and ancillary staff (e.g., cleaners) were excluded. The study was approved by (a) the University of Wollongong Australia & Illawarra Shoalhaven Local Health District Health and Medical Human Research Ethics Committee (HE12/199) and (b) the 2012 Libyan Ministry of Social Affairs by official letter. Site specific approval was given by the General Manager of the Benghazi Rehabilitation and Handicap Center (BRHC) after he received Ministry approval.

Instrument: A survey was used to elicit demographic characteristics, occupation, work patterns, patient education roles, knowledge of centre information systems, awareness of community based rehabilitation (CBR) services and awareness of the international UN Disability Convention. The survey was drafted in English, translated to Arabic and back-translated to English to assure accurate meaning.

Data collection and analysis: Data was collected in Benghazi from September 2012 to late October 2012. Staff were invited to complete the paper-and-pen survey anonymously and deposit it in a secure box collected by the researcher. All clinical and administrative staff at the centre were invited to participate as anonymous volunteers. Data were collected in Arabic.

Field study visit findings were collected through note-taking in Arabic. Note-taking was determined to be less intrusive, more confidential and secure than electronic recording. Field study data included: observation and facilities inspection; incidental conversations about services, procedures and centre arrangements; and documents relating to centre services, policies and procedures. Field notes were analysed by: identifying descriptive information in the notes relevant to describing the context or facilities of the study site; selecting information in the notes that described or explained one of the following - organisational arrangements, procedures used for patient records, or workforce practices.

Data analysis: Descriptive statistics were used to aggregate data, and Chi-square (X^2) explored associations using SPSS version 21. Answers to open questions were translated into English, categorised by topic and the frequency of response was type counted and recorded in SPSS™ version 22.

Center description

The BRHC is a specialist institution that has served the people of Benghazi and surrounding area since 1983 [29]. The centre was not damaged during 2011. It is a complex of well-appointed buildings, with power, sanitation, waiting areas, in-patient male wards, prosthetic manufacture facilities, consultation rooms, offices and biomedical laboratories connected by covered walk-ways within a walled precinct. The center offers psycho-social services and there are social workers and psychologists but no visiting psychiatrist. The centre offers specialised physical rehabilitation services, with a large department for amputee rehabilitation. Physical rehabilitation services were the focus of this case study. Physical rehabilitation services can be used by non-disability patients if they have a referral (for example if it is a fracture or strain and physiotherapy is needed). The limited availability of therapy services in primary health care or district hospitals is the reason this occurs. Since 2011 there has been no public transport. At the time of the study, workers reported they could travel safely to and from the centre using private transport. Patients travel to and from the center using private transport.

In-patient facilities in 2009 consisted of 100 beds, however since 2010 only males have been admitted. This is because the 40 bed female ward was gutted in 2010 with a view to refurbishment but it remains an untouched construction site. No alternative interim arrangements were made at the time of demolition. Most of the 60 male beds are occupied by long stay patients (estimated to be $n=45$ beds), with length of stay reported to be from 2 to over 20 years (no

mean length of stay could be calculated because of a lack of centralised system wide records). Reasons for long stay included an inability to be discharged home, no disability support services within communities, no home care services, no supported community accommodation, no long term residential high-care facilities, and no community based rehabilitation services. There is a very busy outpatient service that attends to acute and chronic conditions related to disability. During and after the 2011 conflict primary care services were also provided because there were so few other services available.

BRHC has a well-equipped orthopaedic and prosthetic workshop for inpatient and outpatient care, with specialist technicians and therapists. The center has a long tradition of specialised prosthetic practice as a result of international donor investment [9]. Before the 2011 conflict patients with amputations came in from across the country for prosthetic assessment, manufacture, fitting and training. Bed block is a serious problem for new patients as there are few free inpatient beds available.

Some donated or government funded physical rehabilitation and prosthetic equipment in the center could not be used because: there was no user-training when it was installed; people who were trained left; or more commonly there were no resources, technicians, maintenance crews or parts available to service, maintain or repair the equipment. Delivery and acquisition of clinical and administrative consumables was problematic in 2012 with supply lines interrupted by conflict.

At the time of the study, a centre-wide information system had not been developed and there was scant access to and use of computers making information systems even more of a challenge. Patient records were based in departments and they tracked particular episodes of care - for example the assessment, manufacture, fitting and training of amputee prostheses. If inter-departmental service was required patients carried records with them. The center was a referral service, but in 2012 so many people were in need of care not available elsewhere, patients would present with or without referrals. The lack of institution wide information management or record system meant that it was difficult for staff to ascertain presentation number or type, services requested and used, diagnostic categories, co-morbidities, severity of conditions, length of stay, discharge destination, referral and service use patterns, patient demographics and treatments. This created management and planning challenges.

Workforce Description

There are n=369 workers employed at the BRHC [29]. The organisational structure is hierarchical, with a General Manager, central administration services, and department heads reporting to the general manager across service types such as nursing, outpatients, therapy, and staff supervisors (who may have been department heads). According to the 2011 BRHC Annual Report [29] there were n=150 managerial and financial affairs workers; n=158 in the health care department; n=22 in the

rehabilitation and social care department; n=17 in the prosthesis manufacturing department; n=25 in operation and maintenance. At the time of the study in 2012 there was one physician in the prosthetics department. BRHC nurses, therapists and prosthetic technicians were all trained in Libya. Although funded by the government, from time to time in 2011-2012, there were delays in payment of salaries, but staff continued to come to work in expectation that they would ultimately be paid because this had happened in the past.

Workforce Survey Results

Of 232 eligible staff, 30.6% participated (n=72). Participants had a mean age of 39.4 years (Mdn 38.1, range 26 to 66, SD 8.2, 3 missing); 56% (n=40) of participants were male (43%, n=31 female). All lived in Benghazi, were Libyan citizens and had Arabic as their first language. In rank order from highest to lowest proportion education level was:-

- 28.2% intermediate secondary school (n=20; 6 females, 14 males);
- 22.5% University Bachelor degree (n=16; 9 females, 7 males);
- 16.9% senior high school (n=12; 7 females, 5 males);
- 14.1% college Diploma (n=10; 3 females, 7 males);
- 5.6% technical qualification (n=4; 1 female and 3 males)
- 5.6% primary school (n=4; 3 females, 1 male); and
- 4.2% University Master's degree (n=3; 2 female and 1 male).

There was no association between gender and level of highest education ($X^2 = 2.808$; $p = .246$) when grouped into: (a) school (primary, secondary or high school leaving certificates); (b) college (Diploma or Technical Qualification); and (c) University (Bachelor, Masters). The statistical association between occupation and highest qualification was significant ($X^2 = 11.053$, $p = .026$) across three groups of (a) nurses, (b) therapists and technicians and (c) administrators and managers. These three aggregated groups were used to ensure cell sizes >5. More staff in management/administration held university qualifications; only three nurses and one therapist held bachelor degrees. Most therapists and one prosthetic technician held diplomas. Overall, in every group most workers had secondary school as their highest qualification.

Occupation: Most participants were therapists (26.7%, n=19; 4 females, 15 males), followed by administration officers 22.5% (n=16, 9 females, 7 males), nurses 19.70% (n=14; 12 females, 2 males) prosthesis technicians 12.70% (n=9; all males) and administrative managers 7% (n=5; 1 females, 4 males). Biomedical and x-ray technicians were grouped together as these were very small cohorts; 5.6% of participants came from this aggregate group (n=4; all female). There was one male physician in the sample. The highest response rate for an occupational group was therapists (n=19 of a total 30; 63%); followed by prosthesis technicians (n=9 from a total n= 14; 64.3%); nurses (n=14 of 67, 20.8%) and administration officers (n=16 of 135, 11.8%). There was a significant association ($X^2 = 14.677$,

$p=0.001$) between occupation and gender. Most therapists and prosthetic technicians were male and most nurses and administrative workers were female.

Work arrangements: All staff were employees; in the past there were visiting physicians but not since the conflict. Apart from nurses who worked in shifts, the usual work day was 8 am to 2pm. At the time of the study a new policy had been issued by the Ministry of Social Affairs that the standard work hours for all BRHC would change from 8am-2pm to 8am-3:30pm. This new policy was still in the process of being implemented. Workers had to sign-on at commencement and sign-off before going home. Although work hours were prescribed there was some department flexibility. Separate clinical assessment and treatment areas were provided for male and female patients and staff preferred to work in same-gender areas. The closure of the female inpatient ward meant that female nurses had to work on the male ward and this was reported to be uncomfortable for some.

Recruitment and retention: The average length of employment at BRHC was 13.28 years (range 1 to 35 years; 13.87 years females; 12.82 years males); relationship of gender and average length of employment was not significant ($t=-.506$; $p=.615$). A third had worked there for over 20 years (21-25 years, 22.5%, $n=6$ females, $n=10$ males; over 26 years 9.8%, $n=7$, all males). Just under a third had worked over 10 to 20 years (30.9% 11-20 years, $n=12$ females, $n=10$ males); and less than a third worked 10 or less years (6-10 years, $n=16$, $n=10$ females, $n=6$ males; <5 years $n=13$, 5 females, 8 males).

Job descriptions and/or task-specific positions could not be identified. There was no formal documented human resources workforce planning or allocation system - managers were aware of the labour needs of their areas. In some clinical areas there was reported to be a shortage of staff. Recruitment and selection of new staff was done when needed and when finance was available. There was no formal documented human resources turnover, retention or succession plan.

Teamwork: More than half the participants (53%) reported that they did not work as a part of a team; just 42% ($n=30$) did. The BRHC did not have a formal team system so when it did occur it consisted of episode-specific care teams such as: (a) nurse and therapist (8.5%); (b) therapist, prosthetics technician and orthopaedic physician (7%); or (c) therapist and prosthesis technician (2.8%).

Patient Education: The majority of participants did not provide training to patients or their families ($n=48$, 67.6%), but a minority did ($n=22$, 31%) ($n=1$ missing). These were predominantly technicians or therapists. Similarly provision of training to the community in general was very limited ($n=8$, 11.3%).

Perceptions of service provision before and after the revolution: Most 63.4% ($n=45$) participants indicated no change in the type of services provided at the BRHC from before the revolution to after it. In response to an open

question about diagnoses seen at the centre after the revolution, $n=28$ participants reported stroke, $n=25$ said different types of physical disability, and $n=17$ specifically identified amputations. Other conditions mentioned by participants were fractures ($n=8$), cartilage damage ($n=8$), accident cases ($n=8$), spinal cord injuries ($n=1$), neck injuries ($n=1$), pelvis injuries ($n=1$), and damage to vertebra ($n=1$). These participant reports could not be corroborated against centre records because there were no aggregated patient information systems that could be used to track diagnostic categories or services provided.

Information management systems: Participants 53% ($n=37$) reported no centre-wide or out-patient information management system. Others identified there were patient records but these were not linked between different departments ($n=45$, 63%); for example inpatient nursing files and prosthesis workshop registration and service files. Some patients at the centre had initially received medical and rehabilitation treatment overseas before being repatriated and admitted to outpatient or inpatient services at the centre. A minority of participants had seen records sent from overseas for these patients ($n=16$, 22%).

The lack of institution wide patient records meant that it was difficult to ascertain presentation number or type, services requested and used, diagnostic categories, co-morbidities, severity of conditions, length of stay, discharge destination, referral and service use patterns, patient demographics and treatments. This situation was exacerbated during and after the revolution when demand escalated.

Community Based Rehabilitation (CBR): 41% ($n=29$) thought there were no CBR or home services for people with disabilities; 48% ($n=34$) did not know (8.5%, $n=6$ missing). A few participants ($n=6$, 8.5%) reported there was CBR available- all of these people were senior professionals. No national or district policies, procedures or program reports on CBR could be located.

Awareness of the United Nations Convention on Rights or People with Disabilities (UNCPRD): More than half of participants ($n=40$, 58%) did not know that the United Nations had a CRPD, but 42% ($n=29$) did. These were therapists ($n=9$), prosthetic technicians ($n=6$), nurses ($n=5$), administrative managers ($n=4$), administrative officers ($n=4$) and one physician. Less than half of these people ($n=11$) knew that Libya had signed this Convention. This included all prosthesis technicians, half the administrative managers and one physician, therapist and administrative officer.

Discussion

This study makes a unique contribution to disability services research in the Eastern Mediterranean Region (EMR) through a first-hand account and workforce survey of the only functioning physical disability service in post-revolutionary Libya. Such information will help inform disability service planning and management efforts in the future. The case study revealed a stable workforce continuing to function in spite of conflict and in difficult

circumstances. It also revealed areas for workforce development and opportunities for disability service capacity building particularly in relation to discharge options and information system development. The key findings are now explored.

The study revealed that the BRHC had, in difficult circumstances, continued its work during and after the revolution, retaining sufficient clinical staff to maintain a physical rehabilitation program that included amputee care. Staff attributes may have contributed to workforce retention and continued service during and after the conflict: all study participants were Libyan, they could only speak Arabic and most had qualification levels that were lower than staff in equivalent positions in European countries - this may have limited their international mobility for work. They were Benghazi residents, most were long term employees and some had been at the centre for two or more decades - their families, networks and resources were thus concentrated in Benghazi. Thus being locally employed, longevity of tenure, lack of qualification mobility and mono-lingual status may enhance workforce stability - this did not affect expatriate staff who left during the conflict.

These workforce attributes are a strength during conflict and post-conflict periods - in-country training and hire of a local health workforce has been proposed to be an effective strategy to meet growing service needs in a globally competitive labour marketplace. The situation in this Libyan disability and rehabilitation service appears to support that suggestion. The highly specialised nature of facilities [29] may also have ensured retention of technicians, because workers could not perform their prosthetic work elsewhere. The disability and rehabilitation service was also able to continue because the security situation in that area of Benghazi was relatively stable - workers and deliveries could get to and from the centre safely even during the conflict. Stability around service centres is an important enabling factor for service continuity - health systems in "crisis-affected fragile states" need to be supported with security arrangements that permit access to and protection of infrastructure [26] and internal security during the 2011-2012 period seems to have been adequate in this part of Benghazi although it has now deteriorated [6].

El-jardhali et al., [31] identified problems affecting health services in the EMR and some of the same ones were identified in this case study. The lack of an integrated information management system was identified in 2006 [9] and again in this 2012 case study. A weak knowledge base as reflected in lower level qualifications in some of the professional staff was also found in the center. Across the EMR efforts are underway to enhance health service delivery and findings of this study suggest that those strategies may have relevance for disability services. There is a small but growing body of evidence relating to health systems in the EMR [31, 32, 33, 34], health and disability services and needs of the Middle East region and Libya in particular [7, 8, 25, 28, 35, 36, 37, 38, 39, 40], and post-revolutionary planning documents relating specifically

to Libyan health [23, 27, 28] to help inform disability services planning which as yet has received little attention.

Conclusion and Recommendations

This study presents the first independent examination of a physical disability and rehabilitation service in Libya. The study site and workforce characteristics have been described. Findings reveal that clinical and administrative workers were retained during and after the conflict, providing evidence to support previous proposals that domestic recruits who are locally trained are more likely to stay.

Findings also reveal that professional development of clinical staff is needed. Some activities that could be considered in a post-conflict environment include: in service training for human services, information technology and rehabilitation equipment use; financial support or work release for qualification upgrades once suitable in-country courses are developed; and recognition of higher qualifications and specialist expertise in a disability services career path.

Information system development is urgently required. While access to computers and training and reliable electricity to use them is limited, paper-based systems could be considered to help build organisational practices and identify information system priorities.

Bed-block arising from the longevity of in-patients may reflect the lack of CBR or supported community care discharge options. Since the center was established as a specialised rehabilitation treatment facility (not a long term residential care service), in time appropriate discharge options should be developed so the specialised inpatient care can be focussed on active rehabilitation. Development of CBR and supported residential care in the community will help a post-conflict Libya meet commitments in the UNCRPD. CBR not only provides direct local services, but it also provides a catalyst for community inclusion and the environmental adaptations essential for participation in everyday life. In the future it is hoped that a coordinated approach to disability will involve specialist hubs and connected local community services. Places like the BRHC are expertise hubs. If specialist hubs can be safely connected with local CBR services, they can provide the hub-and-spokes model needed for long term rehabilitation, supported residential accommodation and chronic care of complex conditions.

There are many people with disability in Libya now and there will be more in the future. It is hoped that in time peace will come and the country will again be looking at post-conflict scenarios. Findings from this study may then inform coordinated disability and rehabilitation services planning, capacity building and service provision.

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