Medical Rehabilitation in Natural Disasters in the Pacific Island Countries

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Nothing to disclose

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Outline

1. PICs – Overview
2. Natural disasters in PICs
3. PRM status
4. Key initiatives
5. Challenges
6. Future Direction
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Overview of Medical Rehabilitation in Natural Disasters in the Pacific Island Countries

Annatya P. and Khan J. 

Abstract

Pacific Island Countries (PICs) are one of the most natural disaster-prone regions in the world. Natural disasters in the region are mainly due to meteorological storms, typhoons, tsunamis, and mass movements; and/or climatological (extreme temperature, drought, water scarcity) causes. This review presents a regional overview of medical rehabilitation status, and emergent and ongoing medical rehabilitation efforts in natural disaster settings. In most PICs, rehabilitation services remain in situ, in a short-term stage in disaster settings. Adequate, accessible and care protocols focusing on saving lives and treating acute injuries get most attention, while, rehabilitative needs are not prioritized in many cases. Operational and managerial failures seem to impact rehabilitative care of disaster victims in PICs, thus resulting in poor management and care protocols.

Key words: Natural Disaster, Rehabilitation, Pacific Island Countries, Disability, Disaster response

Abbreviations

CRDR: Committee on Rehabilitation Disaster Relief
ESCAP: Economic and Social Commission for Asia and the Pacific
CRED: Centre for Research on the Epidemiology of Disasters
DDHI: Disability, Disaster, Humanitarian Interventions
OCHA: Office for the Coordination of Humanitarian Affairs
SIDS: Small Island Developing States
DRS: Domestic Response Systems
PICs: Pacific Island Countries
SIDS: Small Island Developing States

Introduction

The Pacific Island Countries (PICs) consist of countries situated in the central Pacific Ocean, including many of the thousands of islands scattered across the area (1.5 million square kilometers). These countries are divided into three main groups: those with no permanent population, those with a low density of population, and those with a high density of population. The PICs are characterized by their small size, geographically isolated location, and the lack of major cities. The PICs have limited access to healthcare services and are often affected by natural disasters such as earthquakes, tsunamis, and floods. The PICs also have a high prevalence of chronic diseases such as diabetes, cardiovascular diseases, and mental health issues.

Natural Disaster in the PICs

Natural disasters are occurring worldwide, including in the PICs (2). The PICs are affected by tropical cyclones, heavy rainfall, and flooding. In a study of 10 Pacific Island Countries, it was found that 90% of the population lived in areas affected by at least one natural disaster per year (1). The PICs are particularly vulnerable to natural disasters due to their low elevation, which makes them susceptible to rising sea levels and tidal waves. The PICs also have a high prevalence of non-communicable diseases such as diabetes, cardiovascular diseases, and mental health issues.

Introduction

A disaster is a serious disruption of the functioning of society, which poses a significant, widespread threat to human life, health, property or the environment. Whether from natural disasters, accidents or human activity, whether developing slowly or at a rate of rapid change, major disasters are not uncommon. The reconstruction of a country or region after a disaster can be slow and difficult, with many challenges to overcome. The reconstruction process can take years or even decades, and the recovery process can be slow and difficult. The reconstruction process can also take a significant economic toll, with many economic losses and costs.

Hydroelectric systems (HESs) are one of the most sustainable sources of energy, as they use water to generate electricity. HESs have been shown to have a lower carbon footprint and a lower impact on the environment compared to other energy sources. However, HESs can also be vulnerable to natural disasters such as earthquakes, tsunamis, and floods. The reconstruction of HESs after a disaster can be slow and difficult, with many challenges to overcome. The reconstruction process can take years or even decades, and the recovery process can be slow and difficult. The reconstruction process can also take a significant economic toll, with many economic losses and costs.
MEDICAL REHABILITATION IN DISASTER RELIEF: TOWARDS A NEW PERSPECTIVE

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ABSTRACT

With increasing frequency of natural disasters, recently there is greater focus on the importance and role of rehabilitation services in disaster management. In past disasters, rehabilitative needs were often neglected with emphasis on acute response plans focused on saving lives and treating acute injuries. There was lack of or inadequate rehabilitation-inclusive disaster response plans and rehabilitation services in many developing disaster-prone countries. The World Health Organization (WHO) Emergency Medical Team (EMT) initiative recognizes rehabilitation as an integral part of medical response and patient-centred care in disaster settings. The current developments under this initiative include: development of minimum standards for rehabilitation in emergencies to allow rapid, professional, coordinated medical response by both national and international EMTs. These guidelines ensure EMTs deliver effective and coordinated patient care during disasters and continuum of care beyond their departure. The aim is to strengthen national capacity, foster an environment of self-empowerment of EMTs and local health services; and work in rehabilitation within defined coordination mechanisms in disaster-affected area. A brief overview of rehabilitation in natural disasters highlighting current developments, challenges, and gaps in the implementation of WHO guidelines for ‘Minimum Standards for Rehabilitation in Emergencies’ is discussed to improve care for victims of future calamities.

Key words: Natural disaster, rehabilitation, Emergency Medical Team, disability, disaster response

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1. PICs

- 14 countries divided into 3 zones: Micronesia, Melanesia and Polynesia
- Total population ≈ 9 million people
- Majority (about 80%) living in rural areas
- Most isolated countries geographically: ≈ 1000 islands scattered over 180 mil km² area
- Categorised by UN - Small Island Developing States (SIDS)
## PICs - demographics

<table>
<thead>
<tr>
<th>Country</th>
<th>Sub-Region</th>
<th>Population ('000s)</th>
<th>Area (km$^2$)</th>
<th>GDP per capita (US$)</th>
<th>GDP growth</th>
<th>HCP* (per 1000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>Polynesia</td>
<td>20</td>
<td>237 (15 islands)</td>
<td>10,875</td>
<td>-1.2%</td>
<td>11</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td>Micronesia</td>
<td>111</td>
<td>701 (59 islands)</td>
<td>2,183</td>
<td>-2.9%</td>
<td>3</td>
</tr>
<tr>
<td>Fiji</td>
<td>Melanesia</td>
<td>864</td>
<td>18,273 (322 islands)</td>
<td>3,499</td>
<td>0.2%</td>
<td>3</td>
</tr>
<tr>
<td>Kiribati</td>
<td>Micronesia</td>
<td>100</td>
<td>811 (36 islands)</td>
<td>1,490</td>
<td>3.8%</td>
<td>4</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>Micronesia</td>
<td>64</td>
<td>181 (34 islands)</td>
<td>2,851</td>
<td>1.2%</td>
<td>4</td>
</tr>
<tr>
<td>Nauru</td>
<td>Micronesia</td>
<td>10</td>
<td>21 (1 island)</td>
<td>2,071</td>
<td>-0.1%</td>
<td>11</td>
</tr>
<tr>
<td>Niue</td>
<td>Polynesia</td>
<td>1</td>
<td>259 (1 island)</td>
<td>9,618</td>
<td>5.6%</td>
<td>13</td>
</tr>
<tr>
<td>Palau</td>
<td>Micronesia</td>
<td>21</td>
<td>444 (31 islands)</td>
<td>8,423</td>
<td>2.0%</td>
<td>7</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>Melanesia</td>
<td>6,745</td>
<td>462840 (151 islands)</td>
<td>897</td>
<td>7.0%</td>
<td>0.6</td>
</tr>
<tr>
<td>Samoa</td>
<td>Polynesia</td>
<td>179</td>
<td>2,785 (7 islands)</td>
<td>2,672</td>
<td>4.5%</td>
<td>2</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Melanesia</td>
<td>550</td>
<td>30,407 (138 islands)</td>
<td>1,014</td>
<td>7.3%</td>
<td>2</td>
</tr>
<tr>
<td>Tonga</td>
<td>Polynesia</td>
<td>104</td>
<td>650 (67 islands)</td>
<td>2,629</td>
<td>1.2%</td>
<td>4</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>Polynesia</td>
<td>10</td>
<td>26 (10 islands)</td>
<td>1,831</td>
<td>2.5%</td>
<td>6</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>Melanesia</td>
<td>245</td>
<td>12,281 (81 islands)</td>
<td>2,218</td>
<td>6.6%</td>
<td>2</td>
</tr>
</tbody>
</table>

[Adapted from: Duncan D 2011 and Gero et al 2013]
2. Natural disasters

‘A situation or event caused by nature, which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen & often sudden event that causes great damage, destruction & human suffering'

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Definition</th>
<th>Main Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geophysical</td>
<td>Events originating from solid earth</td>
<td>Earthquake, Volcano, Mass Movement (dry)</td>
</tr>
<tr>
<td>Meteorological</td>
<td>Events caused by short-lived/small to meso scale atmospheric processes</td>
<td>Storm</td>
</tr>
<tr>
<td></td>
<td>(spectrum from minutes to days)</td>
<td></td>
</tr>
<tr>
<td>Hydrological</td>
<td>Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up</td>
<td>Flood, Mass Movement (wet)</td>
</tr>
<tr>
<td>Climatological</td>
<td>Events caused by long-lived/meso to macro scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)</td>
<td>Extreme Temperature, Drought, Wildfire</td>
</tr>
<tr>
<td>Biological</td>
<td>Disaster caused by the exposure of living organisms to germs and toxic substances</td>
<td>Epidemic, Insect Infestation, Animal Stampede</td>
</tr>
</tbody>
</table>

[Vos et al, CRED 2010]
Natural disasters - PICs

- Between 2005 and 2014, almost half of global disasters occurred in Asia-Pacific region.
- Resulted in half a million fatalities (equates to 60% of total global disaster–related deaths).
- Economic losses estimated > US $523 billion.
- PICs classified amongst the world’s top 30 most vulnerable nations.
- High disaster-risk due to: seismically active fault lines, major ocean basins & typhoon tracks and climate change-related events.
- Approx. 41 tropical cyclones/year.
- Combined disaster damages of >US$280 million/year.
- Disaster-related cost some countries up to 6.6% of GDP every year (global averages = 1.2%).
Zones with risk of destructive EQ activities in PICs

[Source: Hamnett MP, The South Pacific Disaster Reduction Program]
## Major natural disaster in PICs (2014 - 2015)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Event</th>
<th>Number affected</th>
<th>Number displaced</th>
<th>Number killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiribati</td>
<td>March, 2015</td>
<td>Cyclone Pam passed over as a category 2 story</td>
<td>2,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>March, 2015</td>
<td>Cyclone Pam passed over as a category 2 story</td>
<td>4,600</td>
<td>350</td>
<td>-</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>March 10-13, 2015</td>
<td>Cyclone Pam passed over as a Category 5 system</td>
<td>189,000</td>
<td>4,000</td>
<td>11</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>March 10-13, 2014</td>
<td>Cyclone Lusi passed over as a Category 2 system</td>
<td>20,000</td>
<td>149</td>
<td>10</td>
</tr>
<tr>
<td>Federated States of Micronesia</td>
<td>March 29 and April 1, 2015</td>
<td>Typhoon Maysak made landfall at Chuuk on Ulithi and Yap</td>
<td>29,700</td>
<td>1,500</td>
<td>4</td>
</tr>
<tr>
<td>Palau</td>
<td>November 7, 2013</td>
<td>Super Typhoon Haiyan passed directly over the island of Kayangel</td>
<td>2,300</td>
<td>900</td>
<td></td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>April, 2014</td>
<td>Three days of heavy rain caused flash floods</td>
<td>52,000</td>
<td>10,000</td>
<td>22</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>March 3, 2014</td>
<td>King tides inundated Majuro Atoll and some outer islands</td>
<td>1,730</td>
<td>940</td>
<td></td>
</tr>
<tr>
<td>Tonga</td>
<td>January 11, 2014</td>
<td>Cyclone Ian passed directly over the Ha'apai Group as a Category 5 system</td>
<td>5,000</td>
<td>2,335</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Office for the Coordination of Humanitarian Affairs (OCHA)
Total life-years lost
1980 - 2012

Source: Ilan Noy 2015 (combined EMDAT and Desinventar data)
Rehabilitation Burden in SODs

(von Schreeb et al 2008)
3. P&RM status in PICs

- Rehabilitation services do not exist and/or are in infancy stage
- Rehab services integrated within other health services
- No registered National P&RM society
- Limited services specific for complex disaster-related disabilities
- Discharge/triage system not in optimal stage
- Poor coordination amongst disaster management organisations (national and international)
- Limited skilled human resources locally - few or no P&RM
- Inadequate CBR facilities
- Limited disability support system and government health plans along the recovery trajectory
- Lack of accurate disability data (incl. persons with pre-existing disabilities)
- Cultural beliefs
4. Key disaster-management initiatives

Global Level

- 1947 - UN Economic and Social Commission for Asia and the Pacific (ESCAP) (53 members & 9 associate members, covering >60% of the world’s population)
- 1994 - World Conference on Natural Disaster Reduction, Yokohama, Japan: PIC governments agreed on a common strategy for disaster reduction
- 1999 - UN Office for the Coordination of Humanitarian Affairs (OCHA) established a Regional Office for the Pacific (ROP)
- 2011 - Indian Ocean Tsunami Warning & Mitigation System
- 2015 – WHO EMT initiative (no team from PICs in registration process yet)
- 2016 - World Bank Global Facility for Disaster Reduction and Recovery (GFDRR) (Projects in 5 countries)
Sendai Framework for Disaster Risk Reduction 2015-2030

Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks.

It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors.

Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

Goal

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.
Sendai Framework Priorities

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction
Sendai Framework 2015-2030

Global targets

• Reduce global disaster mortality
• Reduce the number of affected people globally
• Reduce direct disaster economic loss in relation to GDP
• Reduce disaster damage to critical infrastructure and disruption of basic services
• Increase the number of countries with national and local disaster risk reduction strategies
• Enhance international cooperation
• Increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments
Global Facility for Disaster Reduction and Recovery

• Grant-funding mechanism, managed by the World Bank
• Contributes to implementation of Sendai Framework - developing comprehensive disaster risk management programs
• Focused mainly toward risk reduction efforts, & on risk identification & preparedness
• Global partnership of > 45 countries and international organisations
• FY 2016 supported activities >18 countries across the East Asia & Pacific region (approx. US$760 million in grants)
• Project in 5 PICs: Kiribati, Samoa, Solomon Islands, Tonga, Vanuatu
Key disaster-management initiatives in the region

Regional Level

- **1999** – UN Coordination of Humanitarian Affairs (OCHA) Regional Office for the Pacific (ROP) established

- **2005** - Approved the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015 (Madang Framework) - (umbrella Hyogo framework)
  - Pacific Catastrophe Risk Financing Mechanism (under development);
  - Regional Tsunami Exercise
  - Pacific Disaster Net (online virtual Center of Excellence)

- **2006** - Pacific Disaster Risk Management (DRM) Partnership Network - Strategic National Action Plans (SNAP) for disaster risk management

- **2008** – OCHA – established the Pacific Humanitarian Team (PHT)

- **2009** - ASEAN Agreement on DM & Emergency Response 2010–2015 (AADMER) - ratified by ten member states

5. P&RM challenges

• Medical rehab not incorporated in response planning & disaster management
• Many EMTs do not include rehabilitation physicians
• Lack of disability or rehab need assessments data
• Coordination b/w DM organisations: national & international is vague
• Limited existing host healthcare infrastructure & local skilled health care professionals (e.g., P&RM physicians do not exist in many)
• Poor provision longer-term care planning, CBR resources & facilities
• Discharge issues – access, housing, transportation, CBR etc
• Limited psychological support & cognitive rehabilitation
• Lack of reporting, and measurement tools
• Financial constrains: expense of setting up programs
• Geographical barriers: remoteness of disaster zones
• Cultural/language barriers
6. The way forward

• Collaboration and governance
  – Develop comprehensive rehabilitation inclusive disaster management system
  – Leadership role of the central national healthcare ministry/organisation
  – Enhance capacity & collaboration with national and international organisations, NGOs and EMTs (e.g. ISPRM, Australian Medical Assistance Teams (AusMAT))

• Building capacity in rehabilitation (including regional capacity)
  – Build capacity for disasters preparedness/mitigation
  – Rehabilitation capacity building at national health level Development of a skilled workforce (incl. local EMTs)
  – Develop robust inter-disciplinary and inter-sectoral partnerships

• Comprehensive care of disaster victims
  – Person-centred interdisciplinary care
  – Develop standardised assessment tool and care plan
  – Service provision (including funding) of assistive devices
The way forward [contd.]

• Improve communication (information gathering, sharing and disseminating)
  – Strengthen evidence-based information, data and research
  – Fostering understanding and learning from past experiences
  – Timely dissemination of information

• Increase public awareness
  – Public awareness and education programs
  – Active participation of disaster survivors/family/community
  – Empowerment and educational programs for healthcare professionals

• Strengthen CBR
  – Bilateral assistance for disaster victims: health security, financial, job creation, education etc.
  – Innovative models of rehabilitation (telerehabilitation, mobile units etc.)
  – Build local volunteer/care programs (including family members, community etc.)
Summary

- PICs remains **highly vulnerable** to frequent natural disasters
- Need rehabilitation-inclusive disaster management system
- **Capacity building** (local EMTs)
- Investment in sustainable **health infrastructure & human resources** is crucial
- Develop **multi-stakeholder partnerships**
- **Planning and long-term management (CBR)** of disaster survivors
- Build **evidence for rehabilitation programs**, more research and information dissemination
What next........
Thank you

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