This regional expert group meeting on strengthening research capacity on safety, efficacy, and quality of care of traditional medicine was held from 11 to 13 December 2013. The objectives were to: review the research work on traditional medicines done during the past 5–10 years in the South-East Asian Region; identify priority issues and challenges in strengthening traditional medicine research capacity; and prepare a generic framework for developing research protocols for traditional medicine in order to enhance clinical research capacity on evaluating safety, efficacy, quality of care and integration into conventional healthcare of traditional medicine. Ten of 11 Member States shared their experiences and participated in group work and plenary discussion. Recommendations for Member States and WHO were developed on strengthening research capacity to evaluate efficacy, safety, quality of care and integration into conventional health care systems of traditional medicine.

Strengthening research capacity on safety, efficacy and quality of care of traditional medicine

Report of a regional expert group meeting
New Delhi, 11–13 December 2013
Strengthening research capacity on safety, efficacy and quality of care of traditional medicine

Report of a regional expert group meeting
New Delhi, 11–13 December 2013
Contents

Acronyms and Abbreviations.................................................................................................. v

1. Background ......................................................................................................................... 1
2. Opening session.................................................................................................................... 2
3. Objectives ............................................................................................................................ 3
4. Plenary session 1 ................................................................................................................... 4
   4.1 Introduction of the new WHO Traditional Medicines Strategy 2014–2023 ......................... 4
   4.2 WHO general guidelines for methodologies on research and evaluation of traditional medicines ........................................................................................................ 7
   4.3 Clinical research on efficacy of traditional Chinese medicine ........................................... 9
   4.4 Country presentations ...................................................................................................... 11
   4.5 Panel session .................................................................................................................. 25
5. Plenary session 2 ................................................................................................................... 29
   5.1 Group work: Presentations and discussion ....................................................................... 29
   5.2 Group 1: Clinical research on efficacy .............................................................................. 30
   5.3 Group 2: Clinical research on safety ................................................................................. 31
   5.4 Group 3: Strengthening research capacity on quality of care ........................................... 32
   5.5 Group 4: Research on integration of traditional medicine with primary health care ........ 33
6. Plenary session 3 ................................................................................................................... 35
   6.1 Conclusion and recommendations .................................................................................... 35
   6.2 Closing remarks .............................................................................................................. 38
Annexes

Agenda........................................................................................................ 39

List of participants ........................................................................................ 40
**Acronyms and Abbreviations**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AYUSH</td>
<td>Ayurveda, Yoga and Naturopathy, Unani, Siddha and Sowa rigpa, and Homeopathy</td>
</tr>
<tr>
<td>CAM</td>
<td>complementary and alternative medicine</td>
</tr>
<tr>
<td>ESR</td>
<td>erythrocyte sedimentation rate</td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
</tr>
<tr>
<td>FINER</td>
<td>feasible, interesting, novel, ethical and relevant</td>
</tr>
<tr>
<td>ICD</td>
<td>International Classification of Diseases</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
</tr>
<tr>
<td>PICOT</td>
<td>patients, interventions, comparisons, outcomes, time</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>research and development</td>
</tr>
<tr>
<td>RCT</td>
<td>randomized controlled trial</td>
</tr>
<tr>
<td>SEAR</td>
<td>South-East Asia Region</td>
</tr>
<tr>
<td>T/CM</td>
<td>traditional/complementary medicine</td>
</tr>
<tr>
<td>TCM</td>
<td>traditional Chinese medicine</td>
</tr>
<tr>
<td>TRM</td>
<td>traditional medicine</td>
</tr>
<tr>
<td>TTM</td>
<td>Thai traditional medicine</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
1. Background

The South-East Asia Region (SEAR) of the World Health Organization (WHO) has a long history and rich heritage of traditional medicine (TRM). During the past two decades, the use of TRM has expanded globally and gained popularity, both in developed and developing countries. With the tremendous expansion in the use of TRM worldwide, the safety and efficacy as well as quality control of TRM have become important concerns for both health authorities and the public.

Due to the different approaches and methodologies between traditional and western medicine, evaluating and conducting research on TRM presents a great challenge to all concerned. For instance, the approach to allopathic medicine is more pathogen focused compared to the holistic/universal approach in most traditional systems of medicine, which consider other factors such as the physical constitution, and mental and psychological factors. Although a variety of research activities are being carried out in many countries, there is a lack of research capacity and innovation in this area, and insufficient evidence to support TRM.

In order to overcome these challenges and help research activities in TRM reach international standards, since 1991, WHO has developed a series of guidelines. In October 2013, WHO adopted the Traditional and Complementary Medicine Strategy: 2014–2023, and has been urging Member States to promote research and development, innovation and knowledge management in this area. To this end, a Regional Expert Group Meeting on Strengthening Clinical Research Capacity on Safety, Efficacy and Quality of Care of Traditional Medicine was held from 11 to 13 December 2013 in New Delhi, India (see Annex 1 for the agenda of the meeting), organized by the Essential Drugs and Medicines Unit of the Regional Office for South-East Asia. Thirty participants from 10 Member countries of SEAR (except Timor-Leste) and two experts from China and the USA, attended the meeting. Some Member States were represented by senior officials from the Ministry of Health (the Democratic People’s Republic of Korea and India) (see Annex 2 for the list of participants).
2. Opening session

On behalf of the Regional Director, Dr Samlee Plianbangchang, the Acting Regional Director, Dr Athula Kahandaliyanage delivered his message. He mentioned the long history, cultural acceptance and use of TRM in countries of the Region, especially among remote and rural populations. However, at present, the use of TRM has grown worldwide, even in developed countries where allopathic medicine is the norm. For this reason, the safety and efficacy as well as quality control of traditional medicines have become important concerns for both health authorities and the public. These concerns can be addressed only through research. However, the different approaches and methodologies between traditional and western medicine make evaluating and conducting research on TRM a great challenge for all concerned.

Since 1991, WHO has been developing a series of guidelines to bring research activities in TRM to international standards. It has also held a number of meetings and workshops. At these venues, many Member countries strongly requested WHO to share best practices and experiences in research and development, which provides the evidence base for the safety and efficacy of TRM, and to develop appropriate protocols for clinical studies on the efficacy and safety of TRM. The WHO Traditional and Complementary Medicine Strategy: 2014–2023, newly adopted in October 2013, has also been urging Member States to promote research and development.

Dr Athula wished the participants a fruitful discussion and an enjoyable stay in New Delhi.

Dr Kathleen Holloway, Regional Adviser, Essential Drugs and Medicines, Regional Office for South-East Asia, presented the agenda, objectives and expected outcomes of the meeting, and explained why this meeting was necessary. TRM has been around for thousands of years. Till now, the question of research in the field had not arisen, but with the rapid pace of globalization, and improved scientific and public health knowledge, there is now a demand for research to establish the safety and efficacy of TRM. This raises a host of questions, as some methods suitable for research in allopathic medicine are not suitable for research in TRM. This meeting would need to determine the most appropriate research methods for
establishing the safety and efficacy of TRM. It would also need to examine the quality of care, including that of practices and practitioners, and how best TRM can be integrated into national health systems. Many other questions need to be answered. For example, how would adverse drug reactions be evaluated? How would regulations be enforced? Dr Holloway urged participants to do their best to find answers to some of these questions during their deliberations over the next few days.

3. Objectives

**General objective:** To promote good quality of care and appropriate use of safe, quality and efficacy-assured traditional medicines through research capacity building in Member States of the South-East Asia Region

**Specific objectives**

- to review the research work on traditional medicines done during the past 5–10 years in WHO SEAR and to identify priority issues and challenges in strengthening traditional medicine research capacity;
- to introduce WHO general guidelines for methodologies on research and evaluation of TRM to Member States;
- to prepare a generic framework for developing research protocols for TRM through discussion, in order to enhance clinical research capacity on safety and efficacy, and quality of care in TRM, and to share model research protocols on safety and efficacy, and quality of care of TRM, and research methods on evaluating the integration of traditional medicine into primary care;
- to develop recommendations for Member States and WHO for further strengthening the research capacity of each institution and country.
The expected outcomes of the meeting were as follows:

- country situation of clinical research on safety, efficacy and quality of care in TRM, and operational research on the integration and utility of TRM in primary health care reviewed, and priority issues and challenges in strengthening TRM research capacity identified;
- WHO guiding principles for methodologies on research and evaluation of TRM introduced to Member States;
- a generic framework for developing a research protocol for TRM developed and three specific model research protocols on efficacy and safety, quality of care in TRM and research methods in evaluating integration of TRM into primary care shared;
- recommendations for Member States and WHO for further strengthening the research capacity of each institution and country, respectively.

4. Plenary session 1

4.1 Introduction of the new WHO Traditional Medicines Strategy 2014–2023

Dr Kim Sung Chol

Over the years, WHO has been coming out with a number of strategies in the area of TRM. The first such strategy was in 2002, valid for the years 2002–2005. This had four objectives: national policies for integration; safety, efficacy and quality of traditional medicines; availability, affordability and access to TRM and rational use of TRM. After this, TRM was included in the WHO medicines strategies.

Over the past 10 years, the World Health Assembly has passed two resolutions on TRM: WHA 56.31 and WHA 62.13. The latter resolution requests WHO to update its first TRM strategy: 2002 to 2005, as much had changed over the past 10 years. The number of Member States with a TRM policy has nearly tripled, 119 Member States now regulate herbal
medicines compared with only 65 in 1999, and 73 Member States now have a national research institute for TRM. The new strategy would be based on the progress made by countries and new challenges in the field of TRM. To implement the resolution, the TRM programme in the WHO headquarters was relocated.

However, in the area of regulation, only 56 Member States reported having regulations on TRM practitioners, although in SEAR, six of the 11 Member States have such regulations. Thirty per cent of Member States reported having education in TRM (nine countries in SEAR). One hundred and three countries use acupuncture, but only 29 have regulations for providers, and only 18 include it in national health insurance systems.

Member States face many challenges with regard to regulation of the practice of TRM. The main obstacle is the lack of research data. Lack of mechanisms to control advertising and claims, and lack of appropriate mechanisms to control and regulate herbal products or monitor their safety are some other difficulties faced by Member States. Others include lack of financial support for research on TRM, lack of education programmes for TRM providers, and lack of expertise within national health authorities. Progress in regulating herbal medicines is moving at a faster rate than regulations on practice and practitioners. Lack of regulations on practices and practitioners has led to a lack of integration of TRM into national health systems.

The main objective of the new strategy is to guide and support Member States to integrate TRM appropriately into national health systems to maximize its potential contribution to health and health security, health equity, social inclusion and participation, and sustainable well-being of their populations. The other objectives are as follows, each of which has some strategic directions.

- **Build a knowledge base for active management of TRM through appropriate national policies:**
  - understand and recognize the country situation on TRM;
  - strengthen the knowledge base, build evidence and sustain resources.

- **Strengthen safety, quality and improve effectiveness of TRM:**
product regulation: monitoring and collaboration;

practice and practitioner regulations, based on benchmarks for training, services and interventions.

Promote universal health coverage through integration of TRM into conventional health systems:

- capitalize the potential contribution for improving people-centred integrated health services;
- improve consumer education in order to promote informed choices about self-health care.

To implement the new strategy, WHO has developed seven key monitoring indicators:

- a national/provincial TRM policy;
- increased governmental/public research funding on TRM;
- national regulation for TRM products;
- national/provincial regulation for TRM practice;
- national/provincial regulation/registration for TRM practitioners;
- national plan/programme/approach for integrating TRM service into national health service delivery;
- consumer education project/programme for self-health care using TRM.

In order to monitor implementation, WHO will propose a World Health Assembly resolution on implementation of the strategy. It will submit a report to the Executive Board 134 in January 2014, and to the World Health Assembly in May 2014. After five years, WHO will provide a mid-term report to the World Health Assembly, and make mid-course corrections, if necessary. After 10 years, WHO will submit a final report to the World Health Assembly and update the strategy.
Discussion

Some key points emerged from the discussion that followed presentation of the strategy. To fulfil the objectives of the new strategy, good research methodologies are needed. While this is important, the number of patients available for conducting research may be too small. Therefore, research methods suitable for TRM are needed.

Participants also felt that it was important to understand the gaps in health care and find ways to bridge these gaps through TRM. This led to a discussion on how best to integrate TRM into existing national health systems. Integration involves several aspects – including law, education and practice. In addition, education of the consumer is very important.

4.2 WHO general guidelines for methodologies on research and evaluation of traditional medicines

Dr Harry HS Fong

In the 1980s and 1990s, there was an unprecedented global growth in the use of traditional and alternative medicine in primary health care. This led to serious concerns for the safety, efficacy and quality of the medicines, as TRM is multifactorial and lacks international standards for its evaluation. Despite its long historical use with safety and efficacy experienced by many, a need was felt to develop international standards for research in TRM. At the request of researchers, Member States and others to develop guidelines for research in the area of TRM, WHO held two consultations in 1997 and 2000 in order to develop the guidelines.

<table>
<thead>
<tr>
<th>WHO’s definition of traditional medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional medicine has a long history. It is the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses.</td>
</tr>
</tbody>
</table>
General considerations for developing the guidelines included the differences between countries of TRM practices due to regional and cultural attitudes, practices and philosophy; the need for additional scientific evidence despite its long history of use; the lack of education, training and support for TRM in most countries; and the inability of currently available safety and efficacy data to meet the criteria required to support worldwide use. The methodologies for research and evaluation of TRM are divided into herbal medicines and traditional procedure-based therapies. However, successful treatment is often the consequence of both types of treatment acting synergistically. Thus, the efficacy of TRM has to be evaluated in an integrated manner, taking into account both treatment types. This means that other research methodologies are needed in addition to conventional research measures. Dr Fong said that while conducting research to evaluate safety and efficacy, it is important to remember that safety is more important than efficacy, as the placebo effect of any drug varies from 35% to 80%.

The purpose of developing the guidelines is to promote the proper use and development of TRM. The specific objectives are to harmonize the use of certain terms in TRM, summarize key issues for developing methodologies for research and evaluation of TRM, improve the quality and value of research in TRM, provide appropriate evaluation methods to facilitate the development of regulation and registration in TRM, and serve as a reference source for researchers, health-care providers, manufacturers, traders and health authorities. The guidelines cover a wide range of issues and can be modified to meet the specific needs of Member States, with technical assistance from WHO.

The major topics covered in the guidelines are as follows:

1. Methodologies for research and evaluation of herbal medicines.
2. Methodologies for research and evaluation of traditional procedure-based therapies.
3. Clinical research.

Each of these sections has several subsections. The ten annexes provide detailed, basic guidelines for designing research methodologies for all modalities of TRM.
Dr Fong also mentioned the other related guidelines developed by WHO, and highlighted the need to consult the current primary literature and review articles before starting research in an area. He illustrated this by taking the participants through the process of describing a US Food and Drug Administration (FDA) study on the “Potential role of Chinese herbal medicine in the management of irritable bowel syndrome (IBS): basic and clinical study”. He closed by emphasizing that in the area of TRM, one size does not fit all.

**Discussion**

The presentation of the WHO guidelines raised many doubts. One of these was about gaps in the guidelines, of which outcome measures seem to be the largest. Better outcome measures are needed as, at present, the outcomes “are no better than placebo”. It was suggested that medical endpoints should be identified to overcome this problem. The issue of heavy metals as a component of many traditional medicines led to a lively discussion on whether they were safe or could lead to increased blood levels and subsequent disease and poisoning. Intentional adulteration with allopathic medicines by some practitioners of TRM was also identified as a cause for serious concern. A way had to be thought of for reporting the adverse effects of TRM.

### 4.3 Clinical research on efficacy of traditional Chinese medicine

**Dr Darong Wu**

Dr Wu commenced by explaining what had made research in TRM essential. Largely, it was due to the increasing popularity of TRM and complementary and alternative medicine (CAM) worldwide. She illustrated her talk by giving China’s example of clinical trials in traditional Chinese medicine (TCM). In China, clinical research in the area of TCM is supported by the Government and a nongovernmental organization (the Hong Kong Jockey Club).

Clinical efficacy is a key and central issue, and a firm basis for the development of TCM. Traditionally, the best evidence for efficacy has been provided by the long history of usage, selected case reports and anecdotal
evidence. However, existing clinical research lacks randomization, blinding, safety data and/or short-term outcomes.

To establish the outcomes of safety, efficacy and quality of life, the main features of a clinical trial design are as follows:

- prospective
- repeated observations/visits
- outcomes
- controls
- randomization
- blinding.

End-points or outcome measures are important. A clinical trial end-point or outcome is an indicator measured in a subject or biological sample to assess the safety, efficacy or other objective of a clinical trial. Assessing the outcome can be defined as research aimed at assessing the quality and effectiveness of health care as measured by the attainment of a specified end result or outcome. Measures include parameters such as improved health, lowered morbidity or mortality, and improvement of abnormal states (such as elevated blood pressure). The focus should be on a positive outcome. Patient-reported outcomes are most important.

Most clinical trials have a single primary outcome, whether related to safety or efficacy. The success of the trial is primarily based on the analysis of this outcome. In addition, there are several secondary outcomes that provide additional information about the safety and efficacy of the test therapy.

Dr Wu discussed the general procedures and methods for evaluation of clinical efficacy of TCM. Such studies have two components: developing a rational hypothesis and testing the hypothesis. Several aspects need to be taken into consideration under each of these. Evaluation of the outcome should be based on PICOT (patients, interventions, comparisons, outcomes, time), followed by statistical analysis. She went on to explain the types of study design that would be suitable for such studies. These included experimental studies (randomized controlled trials [RCTs] and non-RCTs)
and observational studies (analytical studies and descriptive studies). RCTs provide the best evidence that the study outcome is actually caused by the intervention by maximally reducing the sources of errors. Results from RCTs are among the most powerful evidence level in testing an efficacy hypothesis. However, in some areas, it may be difficult to conduct RCTs, or they may not be suitable. Non-RCTs may be quasi-experimental studies or controlled observational studies. Dr Wu highlighted the conditions that have to be met when testing/interpreting the internal validity of non-randomized studies and situations in which they could be conducted. However, both RCTs and non-RCTs must be well designed and implemented to enhance valid results in efficacy assessment of TCM interventions. She then led the group through an actual example of a study on “An assessment of acupuncture on specific meridian or specific acupoint versus sham acupuncture for treating functional dyspepsia”, and a study on “The efficacy and safety of a CHM proprietary medicine, hemp seed pill (HSP), in optimal dosage for treating functional constipation”.

Dr Wu highlighted the importance of including patient-reported outcomes in clinical trials for new products, and the necessity of establishing instruments for measuring these in TCM with quantitative approaches. These should follow scientific procedures and methods in order to achieve results that are most likely to be valid. Composite endpoints (or multidimensional measures including primary and secondary outcomes) must be used to comprehensively assess the efficacy of TCM. Among the main challenges is how to harmonize the TCM model and the evidence-based medicine paradigm.

4.4 Country presentations

**Bangladesh**

*A study on the efficacy and safety of a classical Ayurvedic formulation used in skin diseases: clinical part*

**Professor M.S.K. Choudhuri**

Dr Choudhuri described an open controlled trial conducted by them with a guggul preparation for chronic skin diseases. They chose guggul because it potentiates the activity of other herbal medicines. They added five bitter
herbs to guggul along with ghee. The preparation is called *Pancha tikta ghrita guggul*.

The researchers chose chronic skin diseases, as allopathic medicines often do not help in such cases. The single-blind study was conducted in a rural area, with the local community clinic as the venue. Patients were collected via a free medical camp and provided free medicines. All problems were attended to, but those with skin diseases were offered two choices: allopathic treatment or ayurvedic treatment and expenses for diagnosis and follow up. A total of 20 patients in the age group of 12–65 years were included in the study. The skin conditions for which patients were treated included atopic dermatitis, discoid eczema, lichen simplex chronicus, seborrhoeic dermatitis, and allergic and irritant contact dermatitis. There were two doctors; one allopath and one a practitioner of TRM, along with a laboratory technician, medicine dispenser and student volunteer. Data were recorded on forms and patients followed up. Laboratory tests were done as needed.

The study found visual improvement in all aspects of skin diseases, except lichenification. Laboratory parameters such as eosinophil count, erythrocyte sedimentation rate (ESR), uric acid and lipid profile had improved.

**Bhutan**

**Mr Dorji Wangchuk**

Bhutanese TRM, also known as Sowa rigpa, was introduced in the national health-care system in 1968 and is fully integrated with the modern health-care system.

Although no clinical research has been carried out so far, Dr Wangchuk emphasized that all traditional medicines are produced under strict quality control. There is only one manufacturing unit in the country, which manufactures about 100 types of medicines. The drug regulatory authority strictly monitors the safety, efficacy and quality of all traditional medicines, and also certifies manufacturers. The competence of all TRM practitioners is monitored by the Bhutan Medical and Health Council, while the quality of TRM services is monitored by the Quality Assurance Standard Division of the Ministry of Health.
The infrastructure for conducting research is largely in place. A Traditional Medicine Research and Development Committee was established in 2005 to promote a culture of research and scientifically validate traditional medicines for their quality, safety and efficacy. A research guideline on TRM has been published and circulated to all practitioners. In addition, there is a health research ethics committee in the Ministry of Health, which accords ethical clearance if required. Only a few small-scale operational research projects have been carried out so far. However, there is a felt need to conduct research in the area of some common diseases such as diabetes, as well as on the rational use of TRM and the local healing system. Some research proposals have been endorsed by the health research ethics committee but, despite tremendous scope, the lack of technical capacity, funding, research laboratories, motivation and the complexities of TRM formulations are limiting factors.

Democratic People’s Republic of Korea

Successes in research on Koryo medicine

Dr Nam Gung Jin

In the Democratic People’s Republic of Korea, the Koryo medical system is fully integrated into the conventional medical system, even at the primary care level. It accounts for more than 50% of health-care service delivery.

Extensive research has been carried out on the safety, efficacy and quality of care of Koryo medicine. In addition, research has also been conducted on treatment for various conditions with a combination of Koryo and allopathic medicines. Dr Jin elaborated on one of these, “Treatment of ischaemic cerebral stroke with combination of Koryo medicine with an allopathic one”.

The country has an academy of Koryo Medical Science at the central and national level. It has provincial and municipal Koryo Medicine hospitals, while county and Ri hospitals and clinics have a Koryo medical department.

The outcomes of research are disseminated through national scientific conferences, technical seminars and workshops on a yearly basis. With the
availability of telemedicine, dissemination has become easier. Technical information on Koryo medicine as well as guidelines are published for wider dissemination. Despite the many achievements, technical issues such as choosing the most suitable research methodology for a particular type of research and lack of funding are challenges that need to be surmounted. The country requested WHO to provide technical support in formulating policies, regulations, guidelines and research in TRM.

**India**

**AYUSH research in India**

**Dr Dinesh Chand Katoch**

The Government of India has a Department of AYUSH. The acronym AYUSH stands for the following: A Ayurveda, Y Yoga and Naturopathy, U Unani, S Siddha and Sowa rigpa, and H Homeopathy. Each of the disciplines of AYUSH has a separate research council. There are two regulatory bodies; one of these is for homeopathy alone. It has a clinical trial registry and all clinical trials must be registered. It is mandatory for an expert in TRM to be a part of the research team.

Several research studies have been conducted in the past 10 years in each of the disciplines. These include studies on safety and efficacy in numerous areas. Studies have also been conducted on the quality of care of TRM and the impact of integration of TRM in the health delivery system. In addition, there is an ongoing programme on the Development of Pharmacopoeial Standards for both single drugs and compound formulations. A 2012 review mission observed that co-location of AYUSH services in primary health centres, community health centres and district hospitals has helped to improve utilization of public health facilities and provided a greater choice of health care to the people from different medical systems. In many states, AYUSH doctors contribute to the national health programmes. More than 60% of district health facilities have AYUSH facilities. However, functional integration has still to be achieved.

Apart from the large number of research papers published, a number of patents have also been granted or filed. There is a large, well-established research network across the country. There are five research councils, one
for each discipline; and several central and regional research institutes in each of the disciplines. Each of the five research councils has a separate website, and there is a dedicated portal for AYUSH research, which hosts a total of nearly 17,400 papers and abstracts. Other institutions in the country, as well as private organizations and industry, also conduct research in TRM. Policies, regulations and regulators are in place, as are guidelines. Finances are also available to conduct research.

The country requests WHO to facilitate follow-up action on the Delhi Declaration of February 2013.1 Under the ambit of this Declaration, capacity-building programmes and joint collaborative projects can be undertaken to strengthen clinical research. WHO could also develop a database on clinical studies done in the Region, and help identify Region-specific health problems for collaborative research.

India needs to establish high-quality testing laboratories under the research councils. Infrastructure and human resources should be strengthened to develop accredited centres of excellence for various types of research. The country would also like to develop robust standards for the safety and efficacy of selected remedies and therapies of global importance.

India, with its large institutional network and required policies and strategies in place, offers opportunities for undertaking collaborative research. It would like to work with other countries in the Region.

**Brief report on research in Ayurveda**

**Institute of Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurveda University, Jamnagar**

**Dr Galib**

The objectives of Ayurveda are preservation, promotion and maintenance of health in healthy persons, and treatment of diseases in sick persons. It uses drugs from various sources: herbal, animal, metal/mineral and marine, after certain modifications. Public interest in Ayurveda has increased tremendously, for which one of the major reasons is the development of

---

resistance by microorganisms. With this increased demand, there is increased pressure to adopt short cuts such as non-adherence to quality standards while harvesting, collecting and storing the raw material; improper manufacturing processes; intentional contamination and improper use. In addition, there are concerns regarding the safety of certain preparations because they contain heavy metals. Other concerns are lack of familiarity and evidence.

The processing technology of Ayurvedic medicines is very complex but must be strictly followed. The classical texts lay down the manufacturing processes. These make them safe and suitable for use. In addition, the requisite vehicle must be used to administer them. Many studies to prove the safety of metallic preparations have been done at the University, keeping in mind the above principles. Studies on efficacy have focused on some specific disease conditions, as well as on some herbo-mineral and metallic preparations. It was stated that no adverse drug reactions have been reported from the use of these drugs and that this would indicate that the drugs are safe for use. Clinical studies are also being conducted in different parts of the country on a number of noncommunicable diseases. Over the past two years, these studies have been registered on the Clinical Trials Registry of India.

The Gujarat Ayurveda University is collaborating with other organizations to develop fingerprints of products in different phases. It has a mandate to develop standard Ayurveda treatment protocols for lifestyle disorders, organize training programmes for foreign nationals and WHO fellows to generate awareness and better understanding of the technical aspects of the Ayurveda system, and strengthen pharmacovigilance of Ayurvedic preparations. It also plans to develop a base paper on enhancing communication between traditional and modern medical practitioners.

The University requests WHO to facilitate networking among laboratories, Ayurvedic physicians and biotechnologists. It hopes WHO will help to generate awareness of the use of Ayurveda as adjuvant or replacement therapy among physicians of modern medicine. Regulatory authorities and consumers should also be made aware of the concepts of Ayurvedic medicine. Every opportunity should be taken to stress on the impact of different traditional procedures. Guidance and monitoring activities on the rational use of medicines is another area where WHO can
be of help. Knowledge of designing clinical research protocols needs to be strengthened, and extensive training is needed for this.

WHO’s help would be needed in making people aware of the use of metallic drugs. It was stated that in most of the western studies, metallic drugs are subjected to chemical examination using standards applied in modern medicine, focusing only on the metallic content, and that none of the studies report on the clinical or pharmacological aspects. It was further stated that the chemical nature of the finished products being administered in therapeutics must be recognized and that the process of preparation of the drug renders it safe for use.

**Indonesia**

**Dr Siswanto**

The existing system of TRM in Indonesia is based on three P’s: products, practices and providers. *Jamu*, the local TRM system, standardized herbs and phytopharmacea fall under “products”. These products lead to the development of practices or body of knowledge. Providers may be allopathic doctors with an interest in TRM, practitioners of CAM, traditional healers and those practising self-care.

In the area of regulation, providers are regulated through various health ministerial regulations. A number of regulations have been launched to regulate herbal medicines, which are treated as “special products”, different from food supplements. In the area of practices, a draft government regulation on traditional/complementary medicine (T/CM) is being finalized. Formal educational institutes for TRM have been established. The body of knowledge on TRM is being finalized and will be disseminated to a number of universities.

Dr Siswanto gave a number of examples of double-blind RCTs conducted for a variety of conditions, comparing the efficacy of TRM with conventional allopathic drugs. Other types of trials have also been conducted. Several constraints have been identified while conducting such research. Notable among these are lack of funding by sponsors, a variety of recommendations from the Institutional Review Board (IRB) or Ethics Committee on conducting clinical trials in TRM, the difficulty in
implementing methods as strict as in modern medicine such as double-blinding and which controls to use, the inability to obtain a pharmacokinetic profile in phase 1 trials, and the variety of end-points of clinical measurement. These are not as strong as in modern medicine, as the outcome may be a subjective measurement, such as patient-reported outcomes. The research methodology for TRM should be different from that for modern medicine, and the level of evidence can be lowered. Other types of studies should also be considered. In addition, research on herbal medicines should be separately conducted from that on procedure-based therapies such as acupuncture, cupping and others. Ethical review should be done by a special IRB for TRM, or the board should have some members who are experts in TRM.

Maldives

Research of traditional medicine in the Maldives

Ms Badhoora Yoosuf

Maldives has a long history of TRM. Knowledge and skills are passed on from practising parents. Unfortunately, no systematic research has been done in Maldives on the safety, efficacy, quality of care, or integration and utility of TRM in the health-care delivery system at the primary health-care level. However, Dr Mohd Manik, the most well-known TRM practitioner in the country, demonstrated the efficacy of his own medicine in thalassaemia in a case study. Although most traditional medicines are given fresh to patients, some practitioners have developed methods of preserving and dispensing herbal medicines.

Research in TRM in the country is limited by the absence of a national policy and regulation. According to the Maldivian law on TRM, people can practise legally after receiving a permit to practise. However, most people practise illegally, without this permit, and there is no regulatory body to check on this. People can make and earn money from TRM only under a special license from the Maldivian FDA. To ensure the quality of treatment, the Alternative Medicine Board of the Ministry of Health has developed rules and regulations for TRM in the past one year.
Institutional and human capacity to conduct research is inadequate. The country first needs to decide to conduct research in TRM and then identify the best location for this. However, obtaining adequate funds will be a challenge. The knowledge and skills of practitioners on research methods is insufficient. The number of patients/subjects is also insufficient. There is no formal ethical review board, although there is an institutional committee. As no clinical trials have been done, there is no clinical trial registry.

Ms Yoosuf said that Maldives would need a lot of help to strengthen its human resources and tools to conduct research. A national institute of TRM needs to be established, along with the requisite funds. Students would also need scholarships to study. Information about TRM needs to be gathered and formally documented, including data on practitioners, procedures and medicines used. Awareness needs to be created among medical professionals and others on the importance of TRM research, and sharing of experiences among TRM practitioners encouraged.

**Myanmar**

**Safety, efficacy and quality of care in traditional medicines**

**Dr Kyaw Zin Thant**

In Myanmar, there is a TRM University, which awards bachelor’s and master’s degrees. Research in TRM is being carried out since 1963 in three major areas: pharmacognosy, phytochemistry and experimental pharmacology (test for efficacy and safety). In 1984, a United Nations Development Programme (UNDP)/WHO project was initiated on "Standardization, pharmacological and toxicological evaluation of traditional formulations used in Myanmar". Under this project, 59 TRM formulations approved by the TRM Council have been standardized, 266 plants/ingredients have been identified, scientists and technicians have been trained abroad, laboratory facilities upgraded and modern equipment installed. The Clinical Research Unit for TRM was established in 1976 and has an institutional committee on medical ethics for research involving human subjects.
Dr Thant described the various activities conducted since 1991 in the area of drug development, and the health-care impact of these. Research on medicinal plants focuses on the six national priority diseases under the national health plan – malaria, tuberculosis, diabetes, hypertension, diarrhoea and dysentery. In addition, the country has medium-term plans in the area of drug development.

In the area of integration, TRM is well integrated in the national health-care system at all levels. There are hospitals for TRM at all levels, and clinics in all districts and townships. In addition, TRM kits are distributed to the villages for use in an emergency, and those who will use the kits are given specialized training.

The challenges faced in conducting research in TRM include a limited number of research sites and investigators, absence of clinical trial registries and lack of funding.

**Nepal**

**Research in traditional medicines in Nepal**

**Dr Shyam Babu Yadav**

As in other countries of the Region, Nepal has a long tradition of TRM (Ayurveda). About 80% of the people depend on ayurvedic medicines in both urban and rural areas. About 30% of the population depends on the cultivation of medicinal plants for income generation. About 4000 manuscripts on Ayurveda are available in Nepal, and there are about 400 000–500 000 practitioners in the country. The system of Ayurveda is well organized and managed up to the grass-roots level. Other systems of TRM are also practised, including naturopathy, homeopathy, acupuncture, Unani and Tibetan medicine (Amchi).

Ayurvedic medicines are easily available in the market and are quality controlled. The efficacy of various medicinal plants used in different diseases has been studied. One study on the quality of care showed the effectiveness of TRM all over the country. Another study is evaluating traditional healers and their practices, while a third is on standardization of an important medicinal plant. Regarding the integration of TRM in the
health-care delivery system, a study has been done on the effectiveness of training traditional healers to refer cases to the health post. Most of the studies have been cross-sectional, with qualitative and quantitative measures. Final drafts of the studies have been prepared and discussed in expert group meetings. Findings have been shared with related institutions and the Ministry of Health and Population to benefit the community.

In the area of regulation, the Ayurveda Health Policy of 1996 clearly mentions the need for research and establishment of advanced research institutions. The Nepal Ayurveda Medical Council is the apex body for regulation of health and educational institutions. The Department of Drug Administration regulates the manufacture, import and export of medicines, and performs all functions of a drug regulatory body. Clinical research has recently been established at the National Ayurveda Research and Training Centre, but the Centre has no experts in clinical research. However, it provides training in research methodology to graduates. It needs to develop its research capacity further. It has published ethical guidelines and has set up an ethical review committee. The Centre is collaborating with institutes in the West for conducting research, as no clinical research has been done till date.

The shortage of funds is a major constraint. Funds are needed for building research laboratories, developing human resources and infrastructure. The country requests WHO to provide capacity building and training in research, and facilitate sharing of experiences between countries.

**Sri Lanka**

**Research on traditional medicine**

**Dr H.A. Danapala**

Sri Lanka has 13 580 practitioners of TRM, of whom 39% are general practitioners and 61% are specialized or unisectional. There are about 1000 unregistered local healers at the village level.

*Deshiya chikitsa* is the indigenous system of medicine in Sri Lanka since prehistoric times. It has a high degree of specialization, such as
ophthalmology, treatment of fractures and dislocations, and psychology, among others. Occult practices also take place.

So far, no clinical research has been carried out in the field of TRM. Recently, the Ministry of Indigenous Medicine has allocated funds and human resources for research in TRM in the area of noncommunicable diseases and chronic kidney diseases. The areas identified for research include surveys on TRM-based practices, beliefs and experiences; case studies and case series studies; observational studies; and research on validation of drugs, treatment systems and regimens. Observational research projects in the above-mentioned areas are carried out by the Bandaranayake Memorial Ayurvedic Research Institute. Such research would help to protect, preserve, revitalize and transmit TRM. It would also strengthen and validate TRM, and encourage its use.

Among the constraints to research is the lack of funding. Modern methods are needed for conducting evidence-based research. Dosages and frequency of intake of traditional medicines is a grey area. There are no clear pathways to protect intellectual property rights, and no clear mechanisms to transfer indigenous knowledge into a form that is utilizable. There is also no mechanism for international collaboration.

**Thailand**

**Research in traditional medicine: Thailand’s experience**

**Dr Anchalee Chuthaputti**

Between 2000 and 2009, Thailand conducted a literature review in three areas: Thai traditional medicine (TTM), Thai folk medicine and alternative medicine. After analysis of the literature, two more groups were added: herbal medicine and research for developing policies and strategies. Each of these five groups could be further subdivided into several subgroups.

In the area of safety, pre-clinical and clinical studies are conducted by the Medical Plant Research Institute, Department of Medical Sciences, Ministry of Public Health; and Faculty of Medicine, Thammasat University. Post-marketing studies are conducted by the Health Product Vigilance Center, FDA, Ministry of Public Health.
In the area of efficacy, pre-clinical studies are conducted by several research institutes. During 2000–2003, 395 articles on medicinal plants and herbal medicines were published. Of these, 31 were clinical trials. Single-drug formulations as well as poly-herbal formulations were studied. Research was also conducted on traditional procedure-based therapies such as Thai traditional massage.

Quality-of-care standards for medical services in health facilities and in hospitals are laid down. In 2012, a survey was conducted to evaluate TTM services in public hospitals using the hospital standards as the benchmark.

Research has also been conducted to evaluate the integration of TRM services in public health facilities nationwide and on the role of Buddhist monasteries in the use of traditional/folk medicine for community health care. Appropriate models for the integration of TTM in primary care in public health service settings and for community health care have been proposed.

Thailand has the capacity to conduct research in TRM. The National Research Council of Thailand supports research and development of herbal medicines. Clinical trials must be approved by the Ethics Committee/IRB. Clinical research sites are available, as is training for conducting research. Patients are sourced through modern hospitals. Several sources of in-country funding are available. However, there is no clinical trial registry. An information system and database for archiving research in TRM and herbal medicine is needed.

Thailand needs a national master plan on TRM research, which is linked to the National Social and Economic Development Plan. An ethics committee on social and behavioural research should be established for conducting social and behavioural research in Thailand.

The country requests WHO to provide technical support and training in conducting clinical and health systems research. It also suggests that WHO develop a strategy to promote research on the role of traditional healers in community health care in order to help develop an appropriate model for their inclusion in the health service system. A network of researchers and experts in TRM would help in sharing ideas and experiences.
Discussion

Each of the country presentations generated lively discussion. Many of these were related to the integration of TRM in the national health system, the methods used and the degree of integration. The unique Household Doctor system in the Democratic People’s Republic of Korea was the subject of much interest, as the doctors use both systems of medicine, and education in both systems is integrated. Most participants agreed that there was a need to safeguard and preserve old wisdom, prepare digital repositories and inventories of TRM formulations and practices, and strengthen clinical research. All countries asked WHO for help in this area, and to develop adequate infrastructure for conducting research. Lack of funding was another issue common to almost all the countries. A universal need to generate awareness was also articulated.

The use of heavy metals in Ayurveda led to a prolonged discussion. Some participants highlighted the fact that even if very small quantities of a heavy metal are used, the action is cumulative and causes renal failure. This was denied by an Ayurvedic physician, who said that toxicity depends on how the medicine is prepared. If it is prepared according to the classical texts, it does not have any toxicity. He also said that a heavy metal is never used alone, but is always used with another heavy metal, which “cancels” its toxicity. Many other herbal and other ingredients are added and processed for maximum potentiation of effect and minimization of toxicity. It was stated that mercury, lead and other heavy metals are not absorbed by the body if the Ayurvedic product is “purified” and taken in the correct way, for example, with honey. However, it was pointed out that if these drugs are sold over the counter, there would be no control on their use and toxicity. Finally, the consensus was that more studies have to be done to establish the safety of heavy metals. This raised another important concern; no modern hospital would allow a trial of the use of drugs containing heavy metals and neither would any ethics committee. So how would such trials be conducted? It was hoped that the group work would throw some light on this dilemma.
4.5 Panel session

Group work on Efficacy (Group 1)

Dr R.N. Acharya

Dr Acharya took participants through the methodologies for research and evaluation, and the various steps of conducting a clinical trial in TRM. He highlighted the issues and challenges at each step. The problem areas for research in Ayurveda are that it is system-specific and lacks standardization. In addition, pre-clinical safety/toxicity/efficacy data are not available, and there are non-chemical entities or reliance on principles. Diagnosis as per Ayurvedic principles is poorly understood and selection of outcome parameters is difficult. Multiple interventions such as medicines, procedures, lifestyle, diet may be undertaken, which are individualistic and are difficult to monitor for compliance. It is also difficult to conclude which intervention has what role to play in the treatment and try to adopt gold standards. At present, conventional research methods are being used, which are often not suitable. Methods for the evaluation of traditional procedure-based therapies are also needed. A specific protocol may need to be prepared for each disease, in addition to the generic protocol.

Issues and challenges related to other aspects of clinical research include the need for guidance of ethical review committees, compulsory registration with the clinical trials registry through regulation, and better financial investment in research, both national and international. Other issues are a decrease in patient participation due to reduced acceptance of TRM among educated people, and non-availability of evidence-based data on safety and efficacy.

Recommendations for research on efficacy of traditional herbal medicine and traditional procedure-based therapies

Dr Darong Wu

Dr Wu guided participants through the need for and steps of research on efficacy of TRM. The first is to have a good protocol. For this, the first step is to ask a good research question that is reasonable and clearly answerable. In the area of TRM, these questions may be related to treatment or
prevention. The statement of the study question should contain four elements: Patients, Interventions, Comparison group and Outcomes (PICO). One could add Time as well (PICOT).

The next step is to conduct systematic reviews. Such reviews can answer questions related to the effects of treatment, adverse effects, diagnostic and screening tests, prognosis, etiology and cost–effectiveness.

The third step is to choose as easy a way as possible to demonstrate the effect of treatment before conducting an RCT. Several conditions may not need an RCT. Non-RCTs such as quasi-experimental and controlled observational studies may be used to test validity. Taking the RCT as an example, Dr Wu provided a checklist that covered all aspects of the protocol.

Discussion

This focused around the need for a good and accurate diagnosis for conducting a clinical trial. The type of trial to be conducted should also be accurately chosen. All interventions and methods should be standardized, and the terminology made uniform.

Group work on Safety (Group 2)

Dr Agung Pranoto

No single drug is always safe for every patient. Thus, the safety aspects of drugs have to be ensured. Herb–drug interactions may occur; for example, bleeding may occur when warfarin is given with *Gingko biloba*, garlic, *dong quai* or *danshen*. Another key issue is the quality control of any particular herb or mixture of herbs. As with drugs, an herb that is not toxic and therapeutic in one form or strength may be helpful or harmful in a different preparation.

An herbal extract has many effectors, sometime more than 20. The process of extraction should be reproducible, safe and well designed for mass production. Safety monitoring or pharmacovigilance is very important. This constitutes the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or other
possible drug-related problems. Adverse effects may be mild or life-threatening. Dr Pranoto described the safety process and steps of herbal drug development with adherence to the guidelines of good agricultural practices, good extracting practices, good clinical practices and good manufacturing practices.

Every traditional medicine must be beneficial, safe and of good quality. Safety studies require pre-clinical or phase 1 trials, as well as clinical and post-marketing studies, or phases 2–4. Effects on the central nervous system, cardiovascular and respiratory systems constitute the core battery of tests, but supplemental tests are also required. Various aspects of safety have to be examined. Contamination of the drug with various substances during various stages of development should also be looked for. Follow-up studies are required to establish safety over the long term. Although many guidelines are available, these may be difficult to follow in the case of TRM.

Discussion

A participant stated that as pre-clinical toxicology studies were different for TRM, could clinical epidemiology be used? Else, large numbers of animals would be needed. There is also a need to establish the safety of solvents.

Group work on Quality of Care (Group 3)

Dr K.K.D.S. Ranaweera

Dr Ranaweera commenced by dispelling the myth that “natural” means “safe”. Some plants are inherently toxic, as are heavy metals. There are many concerns regarding the quality of TRM products. Some adverse events reported in association with herbal products are attributable to problems of quality. In some cases, they may be adulterated with other medicines and potent pharmaceuticals such as steroids. In other cases, there may be contamination with potentially hazardous substances such as pathogenic microorganisms and agrochemical residues. The wrong species of plant may have been used, dosing may be incorrect, and both the health-care provider as well as the consumer may make a mistake in using the medicine. Thus, there is a need to reposition the development pathway to include the 3 P’s: practices, practitioners and products. With such repositioning, TRM can become a part of the national health-care system.
and contribute to the national economy. Potential areas for research include a survey of TRM-based practices, beliefs and experiences indigenous to different cultures, treatment systems and regimens.

In assessing the quality of care, it is important to identify factors that enhance or lower the quality of care, and find ways of improving the quality of care. In order to improve the quality of care, validation and standardization of services as well as infrastructure are very important. Services should be evaluated and ranked. Information technology-based tools should be used and awareness campaigns conducted through the social media. A reporting system can be developed. A regulatory body would be of help.

**Discussion**

This presentation generated several questions. Participants felt that each of the 3 P’s is important. With regard to products, what is the quality of the product? Is it locally produced? For practices, are traditional practices being followed? What methods are being used? Assessment of practitioners is of utmost importance; who is doing what and are they doing it as they should? How do we know? What about over-the-counter drugs? How are these being taken? Are practitioners diagnosing properly and consistently? How can these be measured, monitored and acted upon? What about procedural quality control? These questions needed to be addressed during the group work.

**Group work on evaluating the integration of TRM in primary care (Group 4)**

**Dr Anchalee Chuthaputti**

There are several types of integration of TRM. The first is a totally integrated system, as in China, Democratic People’s Republic of Korea and Viet Nam. A dual or parallel system is followed by India, Malaysia, Myanmar, Pakistan, Sri Lanka, and Thailand. Countries such as England, Germany and Switzerland, have a tolerant system; that is, they allow the practice of TRM. Belgium and France are examples of a monopolistic system. In some countries, TRM exists as a form of community health care outside the public health system.
Before integrating TRM with the national health-care system, it is useful to monitor and evaluate the utilization of TRM in the country, evaluate the current situation of TRM in the health system, develop an appropriate model for the integration, and study factors contributing to the success of TRM services in the public health system.

The purpose of research in this area is to identify and understand factors that affect the existing TRM system to solve problems in integration. Research is also needed to develop clinical practice guidelines and standard operating procedures to facilitate and systematize integration into the health service system. Research on the use of TRM in community health care would help in understanding the role of traditional healers, the treatment procedures and herbs that they use, and develop a model for strengthening and supporting them. Various factors influence the integration of TRM and these must be considered.

Dr Chuthaputti outlined the various steps to be taken in developing a research proposal and its structure. She also gave some examples of research on integration of TRM in primary care. She illustrated her talk with the example of integration of TTM in the primary care system. She highlighted the need for further research in this area.

Discussion

The presentation made it clear that each country had different ideas about integration. There was much discussion on the pros and cons of the various models of integration in the Region. Integrating the two systems raises other questions; for example, should there be one essential medicines list or two? Why should the two systems be integrated? Perhaps the most important reason is that it decreases the patient burden in hospitals and may reduce costs, satisfy consumers and improve outcomes.

5. **Plenary session 2**

5.1 **Group work: Presentations and discussion**

The participants were divided into four groups to identify research needs, methods and gaps in the areas of efficacy, safety, quality of care and
integration of TRM. Each group had to work according to the following outline:

- What research is needed?
- What research methods are suitable? List essential elements of research design
- What gaps exist?
- Provide recommendation.
- s for Member States and for WHO.

5.2 Group 1: Clinical research on efficacy

The group felt that research was needed both in the area of herbal medicines and procedure-based therapy. Clinical research needs to be done with an adequate control group. Regarding research methods, the group strongly emphasized the importance of a literature review on the theories and concepts of systems of TRM, documentation of co-interventions including medications, non-drug therapies, diets, etc., using appropriate comparators and an adequate number of subjects. They stressed on the inclusion of well-defined and reliable patient-reported outcomes as outcome measures. Three types of research designs were suggested; quasi-experimental study, controlled observational study, and RCT. As for the gaps in research on efficacy, these include: the need for well-designed controlled studies in procedure-based therapies; choosing suitable end-points, as the existing clinical end-points may not meet the requirements of efficacy evaluation of both herbal medicines or procedure-based therapies; and difficulties in deciding an appropriate dosage of herbal medicine in a clinical study.

Discussion

Participants agreed that the theory and principles of TRM are very important and should not be ignored. On the subject of dosage, a practitioner may change the dosage from time to time during the trial, which is not the case in a trial of allopathic medicine. The answer to this would be to use an adaptive or pragmatic clinical trial design. The change
of dose must be carefully and meticulously documented. One problem that could arise is that with the use of different doses, the sample size to determine efficacy may not be enough. In such cases, the intervention needs to be standardized so that dose changes are not an issue. In several systems of TRM, medicines have to be taken according to instructions (such as at sunrise, on an empty stomach, with food restrictions). It is important to administer the drugs exactly as recommended to establish their efficacy. Also, other systems, such as the Unani system, take the personality and temperament of the person into account, which needs to be included in the protocol. All conditions of usage must be documented.

5.3 **Group 2: Clinical research on safety**

This group said that the type of research would be dictated by the research question. The research question should be feasible, interesting, novel, ethical and relevant (FINER). If possible, RCTs should be conducted; otherwise an observational study could be conducted. As to what research method would be suitable, it was stated that in the case of traditional usage in the recommended dose of a medicine prepared according to the classical text, there is historical evidence of safety, and safety studies may not be needed. If there is any change in dosage form, or a known drug is given for a new indication, the full range of safety studies may not be needed, but the level of safety studies should be decided by the authoritative body. A drug that is not prepared as per the classical text and is given for a new indication at a new dosage, as well as all herbo-mineral and toxic herbal drugs require the full range of safety/toxicity studies. Pharmacovigilance studies are required for all categories of drugs and herbal or other TRM products. As these drugs are used to treat noncommunicable diseases, where they have to be used for a long time, long-term studies are needed. The gaps in research identified by the group included unknown mechanism of action of traditional medicines, inability to identify the active ingredients, especially in preparations with multiple ingredients, considerations related to the therapeutic dose and toxic dose, lack of awareness among practitioners and the public of the adverse effects, and post-marketing surveillance. The limited infrastructure and facilities for research, lack of understanding of scientific concepts and inability to conduct meta-analysis due to a small number of patients were other gaps identified.
Discussion

Most of the discussion related to the use of heavy metals and their safety. Many participants felt that any change of formulation or indication of a TRM required full safety studies, even if manufactured according to classical texts. Some practitioners said that heavy metals are treated before use so that they become non-toxic. Others wanted to know how one could be sure that the metals have been treated adequately? How would this be guaranteed?

It was stated that, as heavy metals have a cumulative effect on the body over many years, long cohort studies with adequate infrastructure are needed. How should such studies be conducted? In addition to long-term studies, the use, distribution and promotion of preparations containing heavy metals should be studied. A participant clarified that most drugs containing heavy metals are given as a last choice, and only for short periods, and are not used for children and pregnant women. Usually they are used for elderly patients, so perhaps long-term studies would not be required. However, another participant said that children and pregnant women could and did buy these products over the counter and that heavy metal poisoning had been reported. Finally, the consensus was that long-term studies are required.

The problem of regulation and pharmacovigilance was discussed. One suggestion was to have a regulatory body that would control the manufacture, labelling, promotion and packaging of such drugs. This was followed up by a further suggestion to centralize all pharmacovigilance in the Region so that easily accessible data can be collected on adverse effects. India has such a website: ayushsuraksha.com. Thailand monitors each case to look for adverse events, but most countries do not collect data regularly.

5.4 Group 3: Strengthening research capacity on quality of care

The focus of research should be on the 4 P’s: products, practices, practitioners and patients. Each of these four elements influences the quality of care of TRM. Regarding practitioners, it is important to identify who they are, whether they are registered or unregistered, their knowledge, ideology, experiences, and their patients’ satisfaction. As to what research is
needed, service evaluation needs to be done, such as management and prevention of diseases, rehabilitation, proactive work in the community, promotion of TRM wisdom, among others. These would be in the category of sociomedical research. Observational research before and after treatment would give an idea of practitioner compliance with TRM treatment protocols, and patient satisfaction and improvement. Regarding products, the type of research needed is also sociomedical, such as documentation of medicaments, location, availability, collection and post-harvesting techniques, and storage. For manufacturing processes, technomedical research is needed, such as standard operating procedures, storage of final products and dispensing instructions. The gaps identified by the group included the absence of a system for ranking practitioners, lack of capacity for conducting research, and motivating unregistered healers to be included.

**Discussion**

A participant felt that rehabilitative care should also be included in the ambit of quality of care. Research could be conducted in two areas: on use and on effect. Would a good quality of delivery translate into a good quality of treatment? The quality of diagnosis and treatment was also felt to be important. The group concurred that a proper referral system was a part of quality of care, so that practitioners who found themselves unable to manage could refer patients for further treatment. There was a concern as to how to set parameters to measure patient satisfaction in terms of quality of treatment, communication and diagnosis.

A need was felt for having a forum for the exchange of good practices, treatment systems, research methods, regulations and policies. For quality control, exchange of information on medicinal plants, including documentation of original prescriptions and their pricing, would help in quality control.

5.5 **Group 4: Research on integration of traditional medicine with primary health care**

The group started by defining integration and the levels at which it can occur – at the level of education and practice, and whether TRM should be integrated or remain separate. The group also recognized the existence of
folk healers at the community level. The approach to research should be multidisciplinary in order to understand practices and find a suitable way to integrate them with the public health system. Research should be conducted after identifying existing problems faced by TRM stakeholders. An attempt should also be made to see which clinical conditions were chosen more often for treatment with which type of medical system – allopathic or TRM. International Classification of Diseases (ICD)-9 or ICD-10 should be used to identify the conditions from the health service database. TRM can contribute to filling some gaps in allopathic treatment such as for chronic diseases (e.g. osteoporosis), reducing or countering the side-effects of chemotherapy, or treating diseases for which the cost of care is high.

The effect of integration could also be studied. Quality of care and patient satisfaction with TRM could be studied through in-depth interviews of patients and providers. Procedure-based therapy can also be studied. Before–after studies of integration in the same or different hospitals could also be done. The cost–effectiveness of TRM versus modern medicine, and whether integration has led to a reduction in utilization of modern medicines were other suggested topics. Other areas for research could include knowledge management, TRM practices, human resources and TRM products.

The types of studies would include prospective and observational studies. The gaps identified were the varying capacity for research in various Member States and the different levels of integration of TRM in Member States.

Discussion

Some of the discussions centred on the various types of integration in Member States. Even if the two systems are fully integrated, many research questions have yet to be answered. As both the paradigms are different, it is important to understand how and when an allopathic doctor would use TRM and vice versa. Comparative before–after studies could be done for this. Are doctors who practise both systems doing as well as a doctor who practises only one system? In many Member States, TRM practitioners give allopathic medicines indiscriminately. This raises the need for examining prescription practices. Does this change if allopathic and TRM facilities are co-located?
A suggestion that encouraged much thought was that of integrating the two systems through treatment, and not by doctors or hospitals. For example, in China, after cardiac surgery, acupuncture is used to relieve pain for 4–6 hours, which helps to prevent lung infection by allowing the patient to cough.

6. Plenary session 3

6.1 Conclusion and recommendations

The animated three-day meeting generated many ideas for conducting research in the areas of safety, efficacy, quality of care of TRM, and integration of the traditional and modern systems of medicine in Member States. Although some Member States such as the Democratic People’s Republic of Korea, India and Thailand had experience in conducting research in TRM, most Member States asked WHO to help improve their research capacity. Lack of funds was also a common issue. Some valuable suggestions emerged, such as having a database of TRM formularies in the Region and digitizing classical texts, having a common regulatory body for the Region, and a common website for reporting adverse events. Member States also asked WHO to facilitate networking and forums for exchange of ideas among TRM practitioners. Member States with good research facilities offered the use of these to other Member States. Conducting collaborative research was another suggestion.

Each of the groups on safety, efficacy, quality of care and integration of TRM was asked to formulate recommendations for WHO and Member States. These were debated upon and presented at the closing session of the meeting.

**Recommendations on Efficacy**

**For Member States**

- Build human capacity and financial resources for research studies.
- Establish a network for sharing research results.
- Establish a national clinical trial registry.
**For WHO**

- Provide technical experts for research training.
- Facilitate the development of research methodologies that are not currently available for procedure-based therapies.
- Facilitate harmonization of terminologies, and formulate guidelines to monitor rational use of traditional medicines.

**Recommendations on Safety**

**For Member States**

- Evolve a mechanism to register pre-clinical/clinical trials to be conducted.
- Form auditing units for on-site verification of units conducting clinical trials and manufacturing TRM products to ensure quality through regulatory bodies.
- Develop infrastructure and trained, qualified human resources for conducting clinical research and validation of procedure-based therapies in T/CM following national and international guidelines.
- Consider conducting long-term safety studies for products that include metallic components.
- Regulate promotional activities for TRM products and run education programmes to make the public aware about safety issues with regard to TRM products.
- Establish a proper mechanism to monitor, report and analyse adverse events following the use of TRM (pharmacovigilance).

**For WHO**

- Formulate and disseminate relevant technical documents, guidelines and other tools for T/CM development, especially for herbo-mineral/metallic preparations to Member States (integrated protocols for safety testing of TRM products).
Help to establish a regional safety profile database.

Facilitate the development of standard operating procedures/generic protocols/clinical practice guidelines/benchmarks for the practice of procedure-based therapies.*

Identify WHO Collaborating Centres to undertake capacity building for efficacy and safety studies.

(* Panchkarma, Ilajbittadbeer, Thai traditional massage, etc.)

**Recommendations on Quality of care**

**For Member States**

- Set up a system to recognize practitioners in the unrecognized sector.
- Set up a system for documentation and validation of knowledge through strategies including in situ preservation of TRM.
- Set up a system for capacity building in research to evaluate the quality of care in TRM.
- Incorporate information and communication technology tools in monitoring the quality of care in TRM.

**For WHO**

- Establish centres for training in the Region on research methods to evaluate and/or enhance the quality of care in TRM.
- Develop common programmes for evaluating the quality of care in TRM using the strengths and expertise available in the country.
- Set up a mechanism to facilitate exchange of resources and information among Member States, which would lead to the development of a network between countries.
- Finance research programmes intended to evaluate and enhance the quality of care of TRM.
Recommendations on Integration

For Member States

- Conduct research to better understand problem situations in integration of TRM and the contributing factors in order to develop appropriate measures to solve the problem to improve the quality of care of TRM services.

- Strengthen research capacity in the Region by forming networks of researchers and research institutes in multidisciplinary fields of TRM-related research for information sharing and providing training.

For WHO

- Help Member States to strengthen research capacity in multidisciplinary fields of TRM-related research, including health systems research, through technical support, training and funding for training in Member States.

- Support research on the role of folk healers in community health care.

6.2 Closing remarks

Dr Kathleen Holloway thanked the participants for sparing the time to attend the meeting and contributing so wholeheartedly to the discussions. It is important to provide safe and effective medicines to the world, and for this, research is crucial. She thanked her staff for working hard to make the meeting a success and declared the meeting closed.
Annex 1

Agenda

(1) Opening
(2) Introduction of New WHO TRM strategy 2014-2023
(3) Introduction of WHO general guideline for methodologies on research and evaluation of traditional medicine
(4) China experience in research on traditional medicines
(5) A review of the country situation on research for TRM
(6) Group work to identify common priority problems, barriers, solutions and recommendations with regard to the research on TRM as per following topic:
  - Research on Safety of TRM
  - Research on efficacy of TRM
  - Research on quality of care in TRM
  - Research on integration of TRM into health system
(7) Develop recommendations for Member States and WHO
(8) Closing
## Annex 2

### List of participants

<table>
<thead>
<tr>
<th>Country</th>
<th>Participant Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bangladesh</strong></td>
<td>Dr Harun-Ar-Rashid&lt;br&gt;Professor Public Health &amp; Research Management&lt;br&gt;Director, Research &amp; International Collaboration&lt;br&gt;School of Health Sciences&lt;br&gt;State University of Bangladesh&lt;br&gt;Dhaka&lt;br&gt;Professor M. Shahabuddin K. Choudhuri&lt;br&gt;Professor of Pharmacy&lt;br&gt;Department of Pharmacy&lt;br&gt;Jahangirnagar University&lt;br&gt;Dhaka</td>
</tr>
<tr>
<td><strong>India</strong></td>
<td>Dr Galib&lt;br&gt;Assistant Professor&lt;br&gt;Department of Rasa Shastra and Bhaishaja Kalpana&lt;br&gt;IPGT &amp; RA&lt;br&gt;Gujarat Ayurved University&lt;br&gt;Jamnagar, Gujarat&lt;br&gt;Professor Rais-Ur-Rahman&lt;br&gt;Advisor (Unani) to Government of India&lt;br&gt;Department of AYUSH&lt;br&gt;Ministry of Health and Family Welfare&lt;br&gt;New Delhi&lt;br&gt;Dr Dinesh Chand Katoch&lt;br&gt;Joint Adviser (Ayurveda)&lt;br&gt;Department of AYUSH&lt;br&gt;Ministry of Health and Family Welfare&lt;br&gt;New Delhi&lt;br&gt;Dr Ghazala Javed&lt;br&gt;Scientist-IV&lt;br&gt;International Cooperation Section&lt;br&gt;Department of AYUSH&lt;br&gt;Ministry of Health and Family Welfare&lt;br&gt;New Delhi&lt;br&gt;Dr Rajeev Kumar Sharma&lt;br&gt;Director&lt;br&gt;Pharmacopoeia Laboratory for Indian Medicines and Homoeopathic Pharmacopoeia Laboratory&lt;br&gt;Department of AYUSH&lt;br&gt;Ministry of Health and Family Welfare&lt;br&gt;Ghaziabad</td>
</tr>
<tr>
<td><strong>Bhutan</strong></td>
<td>Mr Dorji Wangchuk&lt;br&gt;Director-General&lt;br&gt;National Institute of Traditional Medicines&lt;br&gt;Royal University of Bhutan&lt;br&gt;Thimphu&lt;br&gt;Dr Karma Gaylek&lt;br&gt;Medical Superintendent&lt;br&gt;National Traditional Medicines Hospital&lt;br&gt;Thimphu</td>
</tr>
<tr>
<td><strong>Democratic People’s Republic of Korea</strong></td>
<td>Dr Jo Du Jin&lt;br&gt;Director of Koryo&lt;br&gt;TRM Department&lt;br&gt;Ministry of Public Health&lt;br&gt;Pyongyang&lt;br&gt;Dr Nam Gung Jin&lt;br&gt;Section Chief&lt;br&gt;TRM Research and Cooperation&lt;br&gt;Academy of Koryo Medical Science&lt;br&gt;Pyongyang&lt;br&gt;Dr Kangh In Chol&lt;br&gt;Section Chief&lt;br&gt;Institute of External Koryo Medicine&lt;br&gt;Academy of Koryo Medical Science&lt;br&gt;Pyongyang</td>
</tr>
<tr>
<td><strong>Indonesia</strong></td>
<td>Dr Siswanto&lt;br&gt;Director&lt;br&gt;Center for Applied Health Technology and Clinical Epidemiology&lt;br&gt;Bogor&lt;br&gt;West Java</td>
</tr>
</tbody>
</table>
Strengthening research capacity on safety, efficacy and quality of care of traditional medicine

Dr Arijanto Jonosewojo  
Head of Traditional Medicines Unit  
Soetomo Hospital  
Surabaya

Dr Hary Wahyu T.  
Director of Traditional Medicines  
Cosmetics and Complementary Product Standardization  
Badan Pengawas Obat Dan Makanan

Maldives

Ms Badhoora Yoosuf  
Maldivian Traditional Medicine and Alternative Medicine Committee  
Ministry of Health  
Male

Myanmar

Dr Kyaw Zin Thant  
Director General  
Department of Medical Research  
Ministry of Health  
Yangon

Nepal

Dr Chandra Raj Sapkota  
Professor and Head of Department Rasa Shastra TU  
IOM Ayurveda  
Kathmandu

Dr Shyam Babu Yadav  
Ayurveda Medical Officer  
Department of Ayurveda  
Ministry of Health and Population  
Government of Nepal  
Kathmandu

Sri Lanka

Dr Saman Susantha Hettige  
Chief Physician  
Manasa Ayurveda Hospital  
Boralesgamuwa  
Colombo

Dr Hetti Arachachige Danapala  
Deputy Director  
Ayurveda Teaching Hospital  
Borella  
Colombo

Thailand

Dr Yingyong Taoprasert  
Dean and Founder  
School of Traditional and Alternative Medicine  
Chiang Rai Rajabhat University  
Chiang Rai

Mrs Piyaporn Prayakprom  
Director of Natural Product Research Group  
The Government of Pharmaceutical Organization  
Bangkok

Temporary Advisers

Professor Harry H.S. Fong  
Professor Emeritus of Pharmacognosy  
Department of Medicinal Chemistry and Pharmacognosy  
University of Illinois at Chicago  
USA

Dr Darong Wu  
Director  
Programme for Outcome Assessment in TCM  
Department of Clinical Epidemiology  
The 2nd Affiliated Hospital of Guangzhou University of Chinese Medicine  
PR China

Padma Shri Professor Ranjit Roy Chaudhury  
Adviser – Department of Health and Family Welfare  
Government of NCTD  
Chairman – Task Force for Research  
Apollo Hospitals Educational and Research New Delhi, India

Dr K.K.D.S. Ranaweera  
Director  
Bandaranaike Memorial Ayurvedic Research Colombo, Sri Lanka

Ms Anchalee Chuthaputti  
Director  
Office of International Cooperation  
Department for Development of Thai Traditional and Alternative Medicine  
Ministry of Public Health  
Nonthaburi, Thailand
Report of a regional expert group meeting

Professor Agung Pranoto
Dean
Faculty of Medicine
Airlangga University
Surabaya, Indonesia

Dr Rabinarayan Acharya
Associate Professor
IPGT&RA
Gujarat Ayurveda University
Jamnagar
Gujarat, India

Secretariat

WHO Regional Office for South-East Asia

Dr Kathleen A. Holloway
Regional Advisor
Essential Drugs and Other Medicines

Dr Kim Sung Chol
Temporary International Professional
Traditional Medicine
This regional expert group meeting on strengthening research capacity on safety, efficacy, and quality of care of traditional medicine was held from 11 to 13 December 2013. The objectives were to: review the research work on traditional medicines done during the past 5–10 years in the South-East Asian Region; identify priority issues and challenges in strengthening traditional medicine research capacity; and prepare a generic framework for developing research protocols for traditional medicine in order to enhance clinical research capacity on evaluating safety, efficacy, quality of care and integration into conventional healthcare of traditional medicine. Ten of 11 Member States shared their experiences and participated in group work and plenary discussion. Recommendations for Member States and WHO were developed on strengthening research capacity to evaluate efficacy, safety, quality of care and integration into conventional health care systems of traditional medicine.

Strengthening research capacity on safety, efficacy and quality of care of traditional medicine

Report of a regional expert group meeting
New Delhi, 11–13 December 2013