Disasters in Tamil Nadu, India: Use of Media to Create Health Epidemic Awareness

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INDIA is a country prone to natural disasters. It has only 2.4% of the worlds surface but an incredible 16.7% of the worlds population (MIB, 2009). The country has greater and increasing vulnerability to the socio-economic impacts of extreme weather events (floods, droughts, cyclones, hail storm, thunderstorm, heat and cold waves), due to large population growth, and migration into urban areas (De *et al*., 2005).

A natural disaster is the consequence of a natural hazard like an earthquake, landslide, cyclone, flood, or tsunami which affects human activities. Human vulnerability in disasters is increased by poverty and the risk potential for disasters. A lack of planning, preparedness and appropriate emergency management systems can lead to devastating to human, animal, economic, and environmental. The impact of natural disasters has been reduced by increasing preparedness for them, and when a disaster occurs, rapidly and effectively assessing the impact of same (BHRC, 2003). Preparedness includes the use of mass media which can be instrumental in promoting target-centric disaster preparedness. The need for an effective disaster management strategy to lessen disaster impact is increasingly being felt across India, as well as the awareness to involve and strengthen the preparedness of women and children to respond to disasters. This paper is concerned with disaster preparedness using a media campaign in Tamil Nadu, a south-eastern Indian coastal state vulnerable to many disasters that cause losses year after year.

Natural Disaster Profile: Tamil Nadu, India

India is an area of 3,287,263 square kilometers, and a coastline of 7516 km, with the last official census in 2001 showing a population 1.028 billion people (MIB, 2009). Tamil Nadu covers an area of 130,058² kms and has a coastline of about 1,076 kms which is about 15% of the coastline of India. More than
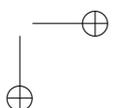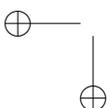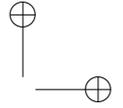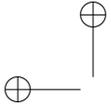
40% of the fisher population live within 1km of coast and 50% of them live within 2km of the coast.

The geographical setting of Tamil Nadu makes the state vulnerable to natural disasters such as cyclones (Mascarenhas & Jayakumar 2007) floods and earthquake-induced tsunami. About 8% of the state is affected by five to six cyclones every year, of which two to three are severe. Cyclonic activities on the east coast are more severe than on the west coast, and occur mainly between April-May and October-November.

Tamil Nadu is also subjected to annual flooding, including flash floods, cloudburst floods, monsoon floods of single and multiple events, cyclonic floods, and those due to dam bursts or failure. Every year, on average thousands of people are affected, a few hundred lives are lost, thousands are rendered homeless and several hectares of crops are damaged. Every year, Flooding in India affects Tamil Nadu and the other Indian states of Assam, Bihar, West Bengal, Gujarat, Orissa, Uttaranchal, and Maharashtra.

Tamil Nadu is also prone to very severe damaging earthquakes. Its people feel much more vulnerable to earthquake-induced tsunamis since the 2004 Indian Ocean tsunami, which affected the coast of Tamil Nadu destroying much of the marine biology and severely damaging the ecosystem (Government of Tamil Nadu, 2008). Crops, settlements, trees, birds, fishes, wildlife, and properties were destroyed. Precious coral reefs and mangrove areas were crushed by the huge tsunami waves that devastated South India, an environmental and economic setback that could take years to reverse. Power and communications were totally disrupted. The damage to humans, especially women and children, and animal life, was tremendous, resulting in emotional and mental trauma (Kumar *et al.,* 2007).

The side effects of a natural disaster: health epidemics

Natural disasters can contribute to the transmission of some diseases, especially since water supplies and sewage systems may be disrupted. The primary risk factors for outbreaks after disasters are often associated with population displacement. The combination of a lack of safe drinking water or sanitation facilities, the degree of crowding, the underlying health status of the population, and the availability of healthcare services all interact to influence the risk for communicable diseases or death in the affected population
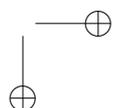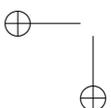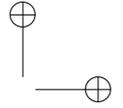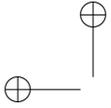
(Watson *et al.,* 2007). Although typhoid can be endemic in developing countries like India, natural disasters have seldom led to epidemic levels of disease since transmission cannot take place unless the causative agent is in the environment. The media and health officials have frequently exaggerated the presence of outbreaks after disasters (Watson *et al., 2007).* However, it is well documented that floods have been known to prompt epidemics (Ahern *et al*.,2005)suchasoutbreaks of leptospirosis in areas where the organism is found in water sources, such as during flooding in Mumbai in 2000 (Karande *et al.,* 2003). Safe water and food supplies are of great importance in preventing enteric disease transmission. Water should be boiled and disinfected if contaminated is suspected. Ideally, natural disaster victims should have a medical evaluation to provide care for wounds potentially contaminated with feces, soil, or saliva, or water that may contain parasites or bacteria. Tetanus booster status should always be kept current (Arguin, 2008).

Gender and natural disasters

Gender is an important dimension within disasters, such as in Indian Ocean tsunamis (ILO, 2000). Vulnerability to natural disasters and their consequences is gendered and socially constructed, meaning that women and men face different challenges during natural disasters because their roles in society have been constructed differently (Fordham, 1998; Jones, 2000). Women from developing countries have a higher morbidity and mortality than men (Fordham, 1998). Indian women often hold a subordinate position to men (Rudd 2001) and are socially and economically disadvantaged in everyday life. They can then expect to be more vulnerable to, and more effected by a disaster.

According to the Pan American Health Organization - a regional office of the World Health Organization, looking at natural disasters from a gender perspective is an urgent requirement to understand what disaster means (Jones, 2000, pp.2) to everyday reality: "The majority of relief efforts are intended for the entire population of a disaster-affected area, however, when they rely on existing structures of resource distribution that reflect the patriarchal structure of society, women are marginalised in their access to relief resources" (PAHO Fact Sheet of the programme on Women, Health and Development, pp.2).
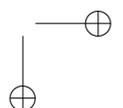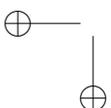
According to Madhavi Ariyabandu, Programme Manager of Disaster Mitigation, ITDG South Asia,- women play a major role in risk and emergency management. She argued that: "the social role assigned to women in South Asian societies as caregivers and nurturers naturally extends to risk management, to secure life and the continuity of livelihoods, and to maintain the life support systems, in times of disasters" (Jones, 2000, pp.2). Additionally, Fordham (1998) contended that gender awareness and sensitivity in disaster research and management was uncommon, and tended to focus on the developing rather than the developed world.

Need for disaster preparedness programs for women and children

Awareness-raising is a basic tool for disaster preparedness and environmental protection, and it is vital to do this particularly among women as they are the capable actors in the post-disaster scenario. They, and children, can assist in strengthening community participation at the local level. Media plays a vital role in raising public awareness and influencing public perceptions, and a well-organized media campaign should be considered as a prerequisite in preparing for disasters. In certain instances the media may have to be motivated to play a pro-active role in environmental issues. Many mass media campaigns on disaster preparedness have been implemented in developed and developing countries in the past several decades. The goals of these campaigns are generally to persuade individuals to either take personal steps to protect themselves, their belongings, and their environment, or to avoid environmental degradation, and the loss of lives and properties. Such campaigns have targeted most of the public. A review of available literature from developing countries has shown that mass media campaigns usually reinforce attitudes among the people. However media have to refrain from perpetuating myths about disasters that do not help situations (de Goyet 2000). The effect of mass media on behavior is indirect and operates through various factors, for example, how people communicate with each other about the mass media messages to which they are exposed may determine their response (Klapper, 1969).
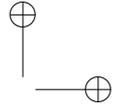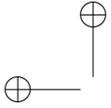
Using the behavior change model in a media campaign

According to behavior change processes described by Roberts and Maccoby (1985), a number of elements need to be considered and addressed in a media campaign to address disaster preparedness: awareness, knowledge and beliefs, behavioral skills, self-efficacy, and supports for sustaining change (William Dejong, 2005). In awareness, a media campaign can raise the consciousness of the problem, prompt reevaluation of personal risk and encourage consideration of individual or collective action (Dearing & Rogers, 1996). The campaign must bring about a change in knowledge, beliefs and attitudes about the behavior being promoted. It is critical to anticipate and address the audience's points of resistance. Behavior change often requires the development of new skills (e.g., self-monitoring, refusal behaviors), which can be taught using media by modeling or step-by-step instruction (Bandura, 1986).

Self-efficacy is the conviction that a person can engage in a behavior and is predictive of subsequent behavior change. Moreover, observing the experiences of other is one way of developing efficacy expectations. Lastly, supports for sustaining change are needed. Learning and maintaining a new pattern of behavior requires that people know how to monitor their behavior; apply self-reinforcement strategies; and anticipate, eliminate or cope with stimuli that trigger unwanted or competing behaviors (DeJong, 1994). Mass communications can be used to teach these self-management techniques.

To apply the behavior change model, campaign planners should try to move the audience sequentially through the remaining steps, noting that it is possible for a set of messages to move an audience through several stages at once, depending on the difficulty of the behavioral objective. (William Dejong, 2005) In developing countries, analyses of media campaigns have shown strong associations between the reach of campaign message and exposure to mass media. Usually, the information flow is from the campaigners to the target audience. These audiences who have already been taught the usefulness of environmental education may be more likely to remember the messages promoting it and thus the information flows to the second-level target audience. The effectiveness of a media campaign is influenced by two main factors, (Randy W.E, Robert S. T., 2004) namely: *What are you communicating?* (The message or content)and *How are you communicating?* (The delivery or presentation). The message is the actual concept or theme which is taken for
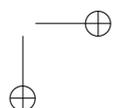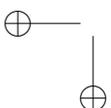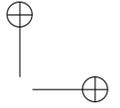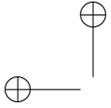
communication, and should cater to the needs of target audience selected for the campaign. Some common areas which are selected for a disaster preparedness campaign are hygiene and sanitation, solid waste management, what to do, what not to do, where to go, whom to contact, how to prepare, disaster management and health disorders.

As mentioned above, the delivery is the way in which the message is being presented or communicated. Presentation varies according to the target audience selected for the campaign. Mass media campaigns should encompass both traditional media as well as electronic media. Traditional media usually includes communications in the form of street plays, puppetry, folk songs like *Villupaatu*, folk arts, or game shows. Electronic media can included communication through audio, video, multi-media, colorful posters, and pamphlets. Content delivery is concerned with the target audience. A mass media campaign cannot be effective unless the target audience is exposed to, attends to, and grasps its message. For example, if the audience is children, the frequency of message delivery, the message placement, the type of media use, and the production quality will have control over the overall effectiveness. Continuous exposure of the same message through various mass mediums will grab the attention of children.

The media campaign in Tamil Nadu

The media campaign was held in March 2009 at the Corporation Middle School of Seeman Thottam, Cuddalore and Kilinjalmedu, Karaikal for tsunami affected children and at Uyyalikuppam for tsunami affected women. The campaign was done as a part of Science and Technology Communication Project funded by Department of Science & Technology, Government of India and National Council for Science and Technology Communication, India.

Our campaign targeted self help groups of women, second and third middle grade Standard Corporation schoolchildren, in Seeman Thottam, Cuddalore and Kilinjalmedu, Karaikal, the coastal districts of Tamil Nadu. It was designed to make participants understand the science concepts behind the effects of disasters, need for preparedness, effects of environmental degradation, and the need for environmental and health awareness, and social issues. The content was designed more application oriented. The approach adopted to deliver the campaign was extensive and included both traditional
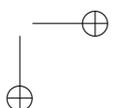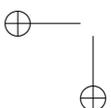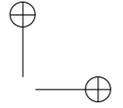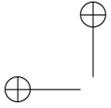
as well as electronic media: puppetry, folk songs in the form of *Villupaattu,* street plays, local radio programs on disaster preparedness and health communication, video programs on disaster preparedness and sanitation, printed color posters, pamphlets, charts, and models; a workshop in the form of game shows, interactive audio and video programs and celebrity video clips. The campaign was done in the Corporation School and the videos were also played in the school premises with the help of LCD projectors. Workshop was also conducted as a part of the campaign. A total of 3 campaigns were conducted as mentioned above and workshops were a part of it.

Aim

This study evaluated a media campaign to increase the awareness level of women and children regarding epidemics in a post-disaster scenario including disaster preparedness and to assess their views on the effectiveness of a range of media in creating health epidemic awareness among tsunami victims in Cuddalore, Karaikal, and Uyyalikuppam, India.

Method

A qualitative exploratory, descriptive research design was used involving a variety of research methodologies.

The participants

A total of three campaigns were conducted.

Media Campaign on Health Epidemic Awareness in post-disaster scenario for Corporation School Children of Seeman Thottam in Cuddalore, a tsunami affected district of the coastal state Tamil Nadu, India.

Media Campaign on Health Epidemic Awareness in post-disaster scenario for Corporation School Children of Kilinjalmedu in Karaikal, one of the four regions of the Union Territory of Pondicherry in India.

Media Campaign on Health Epidemic Awareness in post-disaster scenario for Self Help Group (SHG) Women of Uyyalikuppam in Tamil Nadu, India

For the campaign targeting children at risk, children of 6-7 yrs of age studying second and third middle grade Standard in Corporation School of
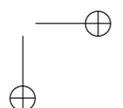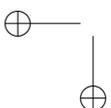
Seeman thottam in Cuddalore and Kilinjal medu in Karaikal were chosen as the participants. A total of 50 participants in each school were chosen. So, the total children participated in the campaign were 100. It is to be noted that all the children and their families were worst affected by the 26th December 2004 Tsunami. With the help of school teachers, we could easily get access to them.

For the campaign targeting women at risk, Self-Help Group Women in Uyyalikuppam, a coastal affected area of Kanchipuram District, TamilNadu were chosen. There were 25 Self-Help Groups in the specified study area. The head of each SHG group helped in getting access to the participants. Using Simple Random Sampling technique, four middle-aged women members from each SHG group were chosen. Hence there were a total of 100 participants for the campaign. It is to be noted that the selected women and their families were worst affected by the 26th December 2004 Tsunami and the formation of SHG groups and its micro-credit activities helped them in a great way to regain their standard of living.

Data collection

A number of methodologies were chosen to collect data: *Pre- and post-testing of school children* Extensive creative pre-testing was undertaken prior to the campaign. The pre-study was undertaken with the corporation middle school students of cuddalore and Karaikal to find out theirprevalent attitudes and behaviors prior to the start of the campaign. This was followed by a post-study a few weeks after the campaign to identify any changes in attitudes and behaviors as a result of the campaign. Comparisons were then made between the findings from the pre-study and those from the post-study.

Research Schedule (where in the questionnaires will be filled by the facilitators of the campaign) was carried out as a part of the pre and post-testing of school children. Since this study incorporates the changes in behavior of the samples, qualitative methods such as Extended Observation, In-depth Interviews were also carried out as a part of pre and post-testing of school children.

Focus-group Discussion was also held with the SHG group women along with the Questionnaire Survey in local language *(Tamil)* during pre and post-test of the campaign.

Observation/In-depth interviews with children affected by disasters.

In-depth interviews allow the collection of rich data and are helpful in discovering previously unknown aspects of an experience (Morse & Field, 1996).

Observation and In-depth Interviews were done with Children of the two Corporation Schools. A total of three in-depth interviews were done by the author with children in the school premises for duration of 30min. Field notes were taken by observing how the children react in a polluted environment, do they contribute to the pollution or try to protect the environment, do they discuss these issues with their friends, families, neighbors etc, the practical problems they face in executing good environmental practices, etc. In-depth interviews were recorded in a Digital IC recorder for analysis and notes were taken on important points for use in the analysis.

Focus group discussions

Focus Group Discussions were done with 100 SHG women in Uyyalikuppam. A total of 10 focus groups were selected among the 100 participants and the discussions were held. Each focus group had a total of 7 to 10 SHG women members. There were ten facilitators for conducting the focus group discussion. Discussion was broadly on the possible health hazards during a post-disaster scenario and how to prepare for safeguarding from disasters, their causes, effects and the effectiveness of media communication tools in communicating such information, their understanding capability, application etc. The discussion was recorded in a Digital IC Recorder for analysis. Notes on important points were also taken for use during the analysis.

Case studies.

The case study method was used because it allows using a variety of sources, types of data and research methods as part of the investigation (Denscombe, 1999).The case study, *A Media Campaign on Disaster Preparedness,* included risk reduction strategies; coastal management; environmental education; and health awareness for the Women and Children at Risk was developed to study the effectiveness of media in educating tsunami- affected women of Uyyalikuppam and children of Cuddalore and Karaikal.

The researcher has taken the Three Campaigns (mentioned above) as the Case Study:
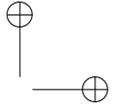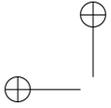
Two Campaigns are targeting Children at risk and the other one targeting Women at risk.

The campaign was analyzed with the help of different research methods namely observation, in-depth interviews, FGDs, research schedule and survey questionnaires.

Data analysis

Based on provocative emotional appeals, the campaign specifically targeted middle aged women and children aged 6 and 7 years. We hypothesized that through actively provoking women and children at risk and thereby creating a discussion among them, a process of interpersonal communication might influence their environmental behavior and would yield a cognitive response.

The results discussed below in terms of percentage are based on the percentage analysis of questionnaire survey among SHG women and research schedule among children. The survey and schedule was taken during pre and post-campaign.

The results from observation, FGDs and in-depth interviews are also discussed along with the percentage analysis.

Findings

Content and Delivery of the campaign

The pre-study with the SHG women in Uyyalikuppam revealed 34% knowledge with respect to Disasters, Environment and Health; and with the second and third class students revealed 30% knowledge with respect to Disasters, Environment and Health. They did not have an in-depth knowledge on these aspects of science. Also, the knowledge which they had was merely theoretical and it was not found to be applied in their day-to-day life. Hence the content of the campaign was designed accordingly for making them understand the science concepts behind all these social issues, effects of disasters, need for preparedness, effects of environmental degradation and the need for environmental and health awareness.
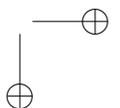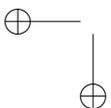
Outcome and Evaluation

Child-Centric Media Campaign

The campaign targeted 100 children of II and IIIrd Class. Besides the selected target children, the other children were also interested in the campaign. They were peeping inside the campaign hall seeing what is happening. The campaign was successful in attracting positive media attention, with coverage in local papers, and TV raising the need for such child-centric preparedness programs. The Media Campaign grabbed the attention of children with the use of three main media tools, namely Audio, Video and Traditional Media. It was visual media which had a reach of about 93% among school children, followed by the traditional media in the form of Villupaattu and puppetry that had a reach of about 90%. Interactive workshops in the form of game shows, video/audio programs were also found to be interesting for the target children. The extent to which the campaign impacted upon awareness was that 91% of students had a clear understanding on the message that was communicated and majority of the respondents made an attempt to follow the disaster preparedness; hygiene and sanitation tips communicated through the campaign and 95% of the children had a clear understanding on their rights to education; good environment and best possible health.

The children were very enthusiastic and eager to watch the video content. The enthusiasm was to a greater extent that one child was repeatedly asking *akka, enna padam ka poda poreenga..? Villu padam podureengala..? (sister, what video are you going to play..? Is it super stars movie?)* This not only shows the impact of video but also the reach of celebrities among children. The Campaign also includes video byte from a celebrity. This particular video byte did not have a great reach as it is not from a popular celebrity. Hence when child rights are communicated through popular celebrities such as tamil film actor, Gilli pugazh *Vijay*, it is expected to have a great reach.

The interviews suggested that there was a high level of contamination of air, water and land aftermath a disaster which identified a need to educate the children to improve the state of the environment by creating awareness on the health disorders, solid waste management, hygiene and sanitation. These findings confirmed the focus of the campaign to provide both awareness and education with respect to disaster preparedness; good environment and best possible health.

The percentage analysis of post-study revealed a clear increase (73%) in the understanding of their right to education; 72% of the children followed the tips to maintain a good environment and best possible health; 75% of the children discussed these issues with other children and family members enabling child participation and children as future actors in the post-disaster scenario.

The feedback from children in relation to the campaign was very positive. The children were eager enough with the campaign that one child named Elumalai was keep on asking *akka.. akka.. nalaikkum vandu idu madiri padam poduveengala? (sister.. sister.. will you come tomorrow also for playing such video?)* This shows the impact of Video (the color, graphics and animation content used in the video programmes) on Children. If video has such a power to attract the children totally towards the content, it can very well be used for promoting disaster preparedness and creating environmental awareness including the rights of the child.

Women-centric Media Campaign

Self help group women were chosen as the target group for the campaign as these women among fisher-folk community are successful and they work in a pattern that the leader conveys the message to other members of the group. By creating health awareness among these Self help group women will benefit many fisher-families.

Uyyalikuppam is a fisher community village in Kanchepuram district in the Indian state of Tamilnadu. Uyyalikuppam was worst affected by recent tsunami in 2004 and by cyclone and flood every year. Aftermath the seasonal disasters, the area is contaminated to a greater extent and because of this contamination; diseases are found to spread increasingly. Hence there is a vital need to create awareness among the fisher-folk on personal hygiene and sanitation / cleanliness / solid waste management etc. There were 25 self help women groups in Uyyalikuppam. Four members in each group are selected and a total of 100 self help group women participated in the study.

Even though, more than half of the respondents were unaware of the importance of cleanliness, media played a major role in acting as a communication tool to create health awareness among the fisher folks. The 94% result in the post test proves it. 54% increase was there in the understanding level of the respondents about the causes of environmental degradation, through me-

dia communication tools. 32% of respondents only were aware about the type of wastes, but once they were taught about it using media, 92% understood the importance of waste disposal and promised to segregate the wastes in future. 54% increase was found in the understanding level of respondents on the importance of construction and cleanliness of toilets. 40% increase as there in the understanding level of the respondents about the importance of washing hands before eating through media communication tools. 56% increase in awareness was found in respondents on the ill-effects of growing nails. Before the communication tool was introduced to the fisher folks, 64% of the people used to spit in Public places. After the introduction of the communication tool 82% of the respondents have learned not to spit in public places. 12% of respondents only were aware about the Cold preventive measures, but once they were taught about it using media, 72% increase in awareness was found among respondents. Only 12% of the respondents are aware that epidemic diseases will spread after a disaster. After the introduction of the communication tool, the awareness level increases to 86%. Only 24% of the respondents know the measures to prevent epidemic diseases, after being introduced to the communication tools there was 72% increase in awareness. 28% of the respondents know the difference between water borne diseases and Vector borne diseases. After the post test, 94% of the respondents know the difference between them. 66% increase was there in the awareness level of the respondents about the preventive measures of dysentery through media communication tools (refer table 1.1and 1.2).

From the campaign, raising awareness was found to be a long-term approach. It requires continuous enforcement to ensure sustainability. The teachers had to repeatedly remind about the campaign and the message that was communicated for the children to follow the hygiene and sanitation tips aftermath the campaign. Hence sustainability is the biggest question mark which could be answered by developing and executing such child-centric awareness programmes repeatedly which can be a solid ground for disaster management and sustainable development of the country.

The Media campaigns should be flexible and properly designed to specific target groups. Design of the campaign and its activities can be diversified to suit the background and interests of each target group. This could be achieved by performing a pre-test before the execution of campaigns studying their needs and wants with respect to the campaign. Moreover, awareness and ca-

pacity building schemes also provide opportunities for children to learn and adopt skills and knowledge to take part in improving environmental situations.
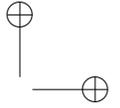
The efficiency of an implementation programme cannot be evaluated quantitatively, since attitudes and behavioral change are a long-term prospect. A weeks time after the campaign, we may get a positive feedback but that may not be the same after a months time. However, media campaigns dealing with the children have a widespread impact over a vast number of people over time with the advent of knowledge sharing with other children and family members. Creative media campaigns tend to have a short-term impact on the children, therefore repeated awareness programmes and well-planned enforcement is vitally important for long-term results. This should include behavioral changes and taking action in education, disaster preparedness, health awareness, and environmental protection.

Conclusion

Learning from both the successes and failures of past mass communication campaigns really helps in using the mass media to promote social issues. Providing access to information alone will not automatically lead to a significant increase in the behavioral change among children. A bridge needs to be built, linking the information pillar with the participation pillar, to stimulate the involvement of children in this cause. If the child along with the public surrounding them is well informed about the child rights, disaster preparedness, health and environmental issues, properly consulted and encouraged to participate in management process, then changes will occur. Also, studies have demonstrated that when long-term mass communication campaigns are designed and executed, they can play a meaningful role in changing behavior, either directly or indirectly. Thus, Media Campaigns with formative research with a neat design and execution had always been successful.

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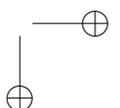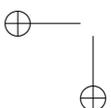
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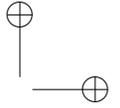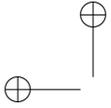
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