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### **India: Opening new avenues for education on sanitation and food preparation while increasing water access**

India, the land of the fierce tiger and majestic lotus consists of a rich regional cultural melting pot enfolded in its timeless history and lush landscape. From the picturesque Himalayan Mountains to the grandiose Taj Mahal, India evidently possesses several charismatic gems, making it such a valuable destination for many. Keith Bellows, of the National Geographic Society describes his perspective on India by stating:

“There are some parts of the world that, once visited, get into your heart and won't go. For me, India is such a place. When I first visited, I was stunned by the richness of the land, by its lush beauty and exotic architecture, by its ability to overload the senses with the pure, concentrated intensity of its colors, smells, tastes, and sounds... I had been seeing the world in black & white and, when brought face-to-face with India, experienced everything re-rendered in brilliant technicolor (Das).

In this historical yet fast developing nation, the social fabric essentially constitutes of two distinct facets. On one hand a person will find high life with fast developing cities and towns enveloped by air conditioned malls, grand multi-cuisine restaurants, huge office buildings housing world renowned software companies, and first class residential areas including lavish mansions. The other segment of the social spectrum comprises of poverty, huts, slums, one room living spaces, food insecurity, unsanitary conditions, lack of hygiene and proper food preparation techniques. Within each sector one can even find multiple layers corresponding to income levels.

In order to explore the food security aspects of the Indian subcontinent, it is imperative to understand the socioeconomic and cultural background of the Indian society at large. A typical urban Indian family consists of an average of two kids and parents. However, it is not uncommon to find families that include the husbands' parents and unmarried siblings as well. The staple foods of India include roti (flattened wheat bread) and rice. Indians also place a high value on education and the country has one of the largest education systems (“India”). Even in the urban poor areas people are starting to realize the value of education and sending their kids to school at least for basic education. Indians generally purchase their produce at local farmers' markets and supermarkets. They also buy certain commodities from local street side vendors. Less fortunate people find some sort of cheap produce or eat food that has been left behind. In this context, it is noteworthy to mention that several people suffer from malnutrition in India. Estimations indicate that about 21% of the adult population is undernourished in the urban areas alone.

Now delving into food security, the issues of water access, sanitation, and food preparation definitely impact food security. Lack of clean water causes people to use mucky water when they cook their food. Limited practice of proper sanitation causes people who handle food to acquire bacteria which then transfers to food. Lastly, lack of proper food preparation techniques creates a potential risk of food poisoning. Evidently, India truly requires assistance in urban poor areas.

According to “water.org” 128 million in India lack safe water and 839 million have no sanitation services. The MDG recommended reducing these numbers by 60% by 2015. This ensures a practical goal without overstretching, but still providing a challenge.

In addition to current statistics, the changing trends in the issues referred above are notable. One method of expressing these trends happens to be through UNICEF and the World Health Organization's web publication titled, "Progress of Drinking Water and Sanitation" (2012). The trends are typically measured in percentages by category for urban and rural areas. These trends do indicate an overall improvement in the situation. However development recorded can be considered as marginal in certain areas and require government and voluntary organizations to take more active role in order to step up the momentum. According to a local Indian urban resident, the poor living in the midst of the urban areas are able to make minor advancement in food safety arena. They include actions such as avoiding open defecation and starting to rinse their hands with water before touching food. Improvements in such behavioral aspects are accomplished mostly on their own with little help from outside agencies.

Moving on, Hyderabad, a metropolitan city in South India with a population of about 6,833,000, is the focus geographic area of study for this paper. Through personal interactions, it is evident that the urban poor communities in the city are recognized and provided some form of governmental aid. However, fundamental issues to food safety remain unresolved. Access to safe and clean drinking water, proper sanitation, and appropriate food preparation techniques continue to be neglected here similar to other parts of the country.

Of the three issues, sanitation and hygiene impacts the environment quite heavily. Unsanitary sewage flows directly into water sources affecting coastal and marine ecosystems and thus harming the environment. This waste in the water affects the valuable natural resources as well. In addition, more water becomes contaminated diminishing quality of the water supply ("10 Things You Need to Know About Sanitation"). Another quite imperative challenge in the area of sanitation is not enough urban poor people are not fully educated on sanitation and hygiene. If proper awareness programs are implemented, targeting school going kids and adults the problem will become less prevalent. The central theme of the first project revolves around educating urban poor adults on sanitation and hygiene through a weekly or monthly event. This event can be organized by an existing relief organization branch in India like UNICEF. Otherwise a separate organization for educating the poor on sanitation and other health topics can be created as well. Most likely this new organization would function with government support as well as donations from the general public. The volunteers would be composed of some youngsters and adults who speak the language native to Hyderabad, Telugu. The volunteers from this organization (or UNICEF) would travel to different urban poor areas in the city and then conduct seminars and demonstrations for the slum communities. These events should be organized along with mass medium of entertainment like the screening of popular regional movies in order to intrigue the poor. The volunteers would explain the importance of sanitation and hygiene through informal presentations at timely intervals during the screening. In addition, the voluntary team can follow up with periodical visits to reinforce the sanitary education. Then the organization would conduct some hands on demonstrations and practice sessions with sanitation tools they bring in like hand soap, regular soap, and towels. By engaging the people directly in such an activity, it would leave a lasting memory of being educated on sanitation in an enjoyable manner. The knowledge acquired through this exercise could then be constantly refreshed by the children of the household who would get a more firm education on sanitation at school.

Regarding the idea of educating the kids at school, the plan consists of implementing educational programs at lower end public funded schools. These schools are typically attended by poor urban youngsters and there isn't enough focus on health education in these schools. Depending on the outcome, eventually the city schools can adopt this practice as well since the education can enrich ongoing sanitation practices as well. Participation in this education would be mandated by the primary education department of the state government. The lesson plans would be prepared by organizations such as UNICEF or WHO and provided to the local schools. This approach lessens the burden on the teachers. Since research has proved that educating kids through visual aids increases their interest in education, the first proposal would be to invoke visual technology. It can be accomplished by bringing in an iPad and allowing the kids watch videos and play games on hand washing and other practices

related to sanitation and hygiene in small groups. The other idea is to educate with the aid of Glo Germ. The Glo Germ Company describes their product by stating the following on their website:

“Glo Germ™ is a product sold both in liquid and powder form that contains proven safe ingredients formulated to be the same size as bacteria, basically 5 microns in size. When used in either the powder or liquid-based form, with the use of an ultra-violet light, it simulates the spread of germs, teaching how quickly and broadly germs can be spread in a short period of time (“Company History”).

The idea with the Glo Germ product requires a basic children’s sink or portable sink in each classroom for the early elementary aged kids. Usually these schools have limited number of classrooms so installation would not be too difficult or impractical. Then couple times a day according to the teachers’ discretion, the kids could use the Glo Germ product at brief intervals in between regular classes. It could be a game to see who possesses the best hand washing skills. The product would be used before the hand washing to compare germs. Once the washing session is done the kids could again look at their germs and the teacher can decide whose hands are the cleanest. The winning student would receive some sort of mini prize like candy while the rest would get something for participation like stickers. Thus this procedure allows the kids to receive the education related to sanitation in an enjoyable way, making it more memorable. In addition, it could be an assignment to practice sanitation at home and the kids could receive points by attaining parent signatures.

In addition to improving education towards sanitation and hygiene, equally vital is enhancing education in proper food preparation techniques. Food preparation comprises of properly treating food before serving in order to ensure its safety. Some parts of this process most frequently overlooked are washing properly, using clean utensils, and cooking the food thoroughly. According to KidsHealth.com, “Proper food preparation protects against food borne illnesses from bacteria such as *E. coli*, *Salmonella*, *Campylobacter*, and *Listeria* (which can cause diarrhea, fever, abdominal cramps, nausea, vomiting, and dehydration)”. Therefore, bringing in more education to India on proper food preparation techniques allows for the betterment of food security.

Food preparatory education need to essentially encompass two primary groups. One key segment is roadside vendors. They don’t always use the proper food preparation techniques and this could severely affect the buyers of the food. The worst offenders of this situation are vendors who sell anything with ice or water. Here the proposal would include creating a government mandated food preparation course required for roadside vendors before they sell food. The course would be paid for by the government, sparing the expense for vendors. After completing the course the vendors would then attain a certificate from the government stating their authenticity. This plan would also include government officials making frequent inspections around the roadside stand areas to make sure all vendors adhere to the mandated procedures. Vendors without a permit would be fined and the government official would explain to them the importance of proper food preparation. They would then be required to attend a course to attain proper food preparation knowledge. As the roadside vendors are usually poverty-stricken people, their main source of income will be from their sales. Thus if the government mandates food safety certification for street carts, then the food vendors will be attracted to attend the sessions in order to retain their income. During this process they would also understand the value of clean food preparation.

The other focus sector includes adults who usually do the cooking for their households. One idea constitutes of setting up a tie up with Indian manufacturers of cooking utensils like *Prestige*, *Hawkins*, or other such companies. On the back or underside of major cooking utensils a general food preparation guideline sheet could be attached in their native language. That way people can have the food preparation education right there with them while preparing their food. The question of how urban poor will access cooking utensils may arise. In response, a local urban poor person stated that most of the women in her community are household maids. They usually receive donations of used household items that their employers have no need for. And many times the employers will donate used cooking vessels to their maids. Thus in that way the poor urban people will have access to these

utensils with food preparation guidelines listed. The guidelines will of course be simplified so the people can read it, even with their limited education or with the help of their school going children.

Another avenue to educate the urban poor communities on proper food preparation techniques is through popular electronic media like television. The target audience would be watchmen for bungalows and apartments, labor workers, and wealthier housemaids. Government health departments and other voluntary organizations could link up with local television channels that air cooking shows. Many adults who watch these shows perform the cooking in their households. Then the idea is just to have those shows incorporate the proper food preparation techniques by embedding them into the cooking demonstrations, opening another channel for food preparation education.

The last aspect of analysis relates to increasing access to safe, potable water. Local urban poor citizens usually use the same water for laundry, drinking, cooking and other basic necessities. This water, often dangerously teeming with bacteria, comes from a groundwater well usually a quarter mile away from home. The improvement proposed in this area consists of using a Biosand Filter. This product has performed wonders for many poverty-stricken areas in different countries including Cambodia, Angola, Laos, and Haiti (“What is the Biosand Filter?”) The Centre for Affordable Water and Sanitation Technology describes the following about the Biosand product:

“The Biosand filter is an adaptation of the traditional slow sand filter, which has been used for community drinking water treatment for almost 200 years. The biosand filter is smaller and adapted for intermittent use, making it suitable for use in people’s homes. The filter container can be made of concrete or plastic and is filled with layers of specially selected and prepared sand and gravel. The sand layer removes pathogens and suspended solids from contaminated drinking water (“What is the Biosand Filter?”)

To use the filter one just needs to pour contaminated water into the top of the device. The water voyages through a series of filtration processes and finally travels out through a connected tube into the user’s collection container. (“What is the Biosand Filter?”). The cost of the filter ranges from approximately twelve to thirty dollars depending on the material and labor costs.

The proposal for usage of the device consists of installing it first in a couple urban slum areas in Hyderabad. Once the device is organized and setup in an area the volunteers from the new aid organization yet to be created (described above) would explain to the community members the process of using the device as well as its benefits. This would all be explained in the local dialect of Telugu so the poor urban dwellers would understand. The second part of this process consists of providing each slum area a collective water tank. This tank would just be like a large plastic bin with a lid used for water storage. And perhaps all families could receive a standard amount of water from the local water source brought in by different families each week. Then if they needed extra water they would be responsible for getting the water from the nearby well and cleansing it through the Biosand filter installed in the community. Hopefully then the poor urban citizens will acquire a sense of satisfaction due to enjoying refreshing, clean water rather than bacteria filled, murky water.

In addition to just setting forth these ideas active involvement from local communities, the national and state governments and other aid/relief organizations is instrumental. First off local communities in India need to be willing to volunteer for this cause. Because they speak the same language as the local Indians they can truly connect and communicate with the poor urban citizens effectively. The new organization (mentioned earlier) would be set up before the volunteers are recruited. The existing organizations that deal with the problems concerning water and sanitation are mostly based in North India (“Water, Sanitation, and Hygiene”). Therefore there are virtually no such organizations in South India especially Hyderabad. Thus an organization should be created in the South Indian areas as well. In addition, promoting the expansion of already existing North Indian organizations would be quite helpful. Also, it is essential to create awareness and receive support from developed

nations like United States. Secondly, influential organizations with international presence such as UNICEF and WHO can undertake powerful advertising campaigns seeking voluntary support and monetary aid for supplies. Lastly government involvement is quite imperative. The Indian government needs to approve and provide administrative and financial support for such innovative and cost effective projects. Keeping in view of inexpensiveness of the proposals mentioned earlier, they can be implemented with a reasonable amount of government aid, UNICEF aid, and private donations.

Another aspect to keep in mind comprises of the fact that rapid pace of urbanization as it causes depletion of resources such as jobs, food, land area and especially clean water in the urban communities (“The Human Impact”). As a long term strategy, the local government should look at options to augment employment opportunities in the rural agricultural sector and spread out industrial activity across the state. Such initiatives would be expected to curtail urbanization and help stabilize water access, sanitation/hygiene conditions in Hyderabad.

As a whole, improving water and sanitation factors will greatly improve the quality of food for the families living in huts. Cooking food in clean, uncontaminated water ensures part of its quality. Secondly, by improving sanitation and hygiene habits people will have less bacteria on their hands while preparing food, therefore transferring less bacteria to food. Also better sanitation and hygiene habits will promote a sense of cleanliness and people may be even inspired to keep cooking stations clean. Thirdly, by improving food preparation skills the quality of food becomes enhanced as cooking would occur in the correct manner. Another huge benefit of improved sanitation and hygiene practices is the environment will be lessened of wastes that spread into bodies of water thus preserving wildlife. In addition to increased food quality, the whole lifestyle for a typical urban poor family will be enriched. All the ideas mentioned above are kept with the view of increasing quality of food as well as lifestyle for typical families. For example if a poor family is taken, they might have six members consisting of two parents, two grandparents, and two kids. The parents will be less prone to getting sick and thus missing their labor work, losing money. Similarly the kids won’t need to miss their valuable school education because of any potential food caused sicknesses. Usually grandparents already will have some sort of ailments due to old age, and low immune system resistance. By eating and drinking clean food and liquids, their chances of acquiring a serious food or water borne disease is seriously reduced. Thus overall in addition to promoting food security these innovations will also promote better life and overall health for the family.

Overall, India truly is suffering from fundamental food safety issues despite the vast advancements it has made. As previously touched on, assistance from advanced countries like United States will help promote and implement these ideals more effectively. And as a nation in a high standard of living we should attempt to share some of our good fortune with poverty stricken nations like India. The little seeds that each of us can plant will amount into a rich harvest for the poor urban Indians. As a popular American author Mark Twain beautifully stated, "India is, the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend, and the great grand mother of tradition." To further add to Mark Twain’s quote, Will Durant also once claimed that because all these starting contributions (from Twain’s quote) to the world from India, Mother India is also a mother of us all in many ways (Das). Thus how can we leave a part of our mother helpless and suffering?

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