Invited Editorial

Innovative healthcare delivery model to expand access and outreach of cancer care services

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INTRODUCTION

Science of cancer research and technology is moving at an extremely fast pace. Even the medical fraternity is finding difficult to cope with the advances made. The health care infrastructure whether physical or human resource is struggling to accommodate the changes. The world has never possessed such a sophisticated arsenal of interventions and technologies curing disease and prolonging life. Yet, the gaps in health outcomes continue to widen. The power of existing interventions is not matched by the power of health systems to deliver them to those in greatest need.[1] With exceptional achievement in science aims of cancer care are becoming higher-from incurability we are moving toward curability. If not cure, prolongation of life has become achievable thanks to very fast advances in cancer research. The research involves a high cost. This cost is transformed and built into the healthcare cost. The cost of care is rising. Despite high level of desirability and activism, the gap between offer and affordability is increasing. Nations with poor economies and developing nations are not able to cope. As a result, our advances are limited to few and transfer of technology is not happening. Research which can deliver cure is not being delivered.

Besides cost, the delivery is hampered by technocrats. There is no enough skilled manpower which can offer these advances to the needy patient. There is huge demand in health care personnel more so in developing nations. We will never be able to match at every geographic area. The research may get stuck in the metros. This would again not allow patients to benefit from the science. There is need to find alternate means of managing manpower issues and finding model for better health care delivery. WHO has proposed six building blocks for the health system to be effective, including health services, health workforce, health information, equitable access to medical products, vaccines, and technologies, good health financing system, good leadership, and governance.[1]

Burden of cancer is on the rise. Majority of the cases are expected in the developing world with lesser human and financial resources.[2] It is societal and economic impact will certainly rise as morbidity and mortality continue to increase, and demands on cancer services escalate.[3]

Diagnosis of cancer is associated with unique psyche of the individual, family, and the society. It is associated with fatality, impending trauma of high-cost care, uncertainty in family, and social support. The diagnosis always comes with lightening shock of impending death. The trained hospitals and staff are located at quite a distance, and it is a challenge to visit these centers. Rural poor in countries like India has fear of "metro" culture and not willing to travel. Families with poor resources, which constitute major population in the developing world, start their own ways of finding solutions. The cost of cancer care especially, in countries where out of pocket expense is high, and there is no structured affordable healthcare, is too high to be born by the patient and family. The major socio-economic issues make patient take alternate routes of treatment because they are cheap, avoid medical treatment, and delay treatment.

The cancer care in India like other countries is concentrated in cancer centers which are in limited

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number. The healthcare services for majority of the population are delivered through government district hospitals. Affording patients may use services of private hospitals.

Madhya Pradesh is one of the largest states in India covering an area of 308,245 km^2 and population of 75 million. It has 51 administrative districts, each with one major hospital. These are most important hospitals for carrying out state-run heath care services. It serves as major referral base at district level supported by chain of government managed medical units right from small village level dispensaries to small block level hospitals. This paper highlights a new unique health care delivery model being experimented to expand the cancer care services to the periphery using existing infrastructure, existing manpower, and existing resources.

Goal of the project

Main goal of the initiative was to decentralize cancer care to peripheral level through the development of an innovative healthcare delivery model. The important issues focused were to extend access of cancer care to the rural area, to increase the reach of cancer-related activities coverage using existing government infrastructure, to offer comprehensive cancer counseling in rural areas, to start chemotherapy and palliative care services, to increase awareness about cancer, to engage more patients in controlled care, to reduce the cost of cancer care burden of the families, to save government resources and properly utilize government resources, to empower local administrative system in cancer education. The aim was to use existing infrastructure and resources to build upon care.

METHODOLOLGY

One medical officer and two nurses involved in routine health care at each district hospital (51 total) were selected for induction into the program. Doctors were trained for a month in cancer chemotherapy, side effect management, counseling, and evaluation. Training included a small curriculum of oncology dealing with common cancers, treatment regimens, administration, and management of side effects. This was an onsite training with daily wards rounds in oncology facility. The oncology centers are busy with large numbers and allowed an adequate exposure. Their knowledge is being further strengthened with regular continuing medical educational (CME) activities and participation in onsite evaluation of cancer patients in his hospital.

This onsite activity is done through properly organized and advertised cancer counseling camps, where local patients are encouraged to report to the local hospital, a senior oncologist counsels and evaluates them in presence of local physician, who is imparted the knowledge in care of this particular patient. The patient may continue further care at district hospital. The physician is regularly and continuously supported through virtual tumor boards and WhatsApp support group in continuum of care, offering a continued model of ongoing training.

Patient profile is stored with the hospital and data being generated relating to outcomes of services as to types of cancer, chemotherapy requirement, patients attending and seeking support, requiring reference to higher centers, financial assistance. The data are starting to be captured in electronic format as electronic medical records. This is allowing to create cancer registry and allowing to analyze cancer incidence and distribution. Administrative reforms were undertaken to improve supply chain of anti-cancer drugs, drug compendium, purchase policies, drug transfer policies between the hospitals and so on.

Monitoring of the program is being carried out by the office of the Commissioner Health Services on a daily basis through phone calls and E-mails to local administrative health authorities and in charge physicians. Routine census is being generated.

RESULTS AND PROGRAM IMPLEMENTATION

Physicians from 51 districts were selected in batches. A total of 51 physicians and 102 nurses were trained. The first batch of physicians was back into the district hospital in April 2014. Their skills and abilities were peer reviewed by independent board and were found adequate to start the care at district hospital level.

The training was further strengthened with regular CME activities related to various oncology areas, including early diagnosis and palliative care. More than 5 CMES have been conducted. Physicians are being routinely taken to attend national oncology seminars and conferences.

A special WhatsApp tumor board has been initiated where all cases are brought up for review and discussed between these 51 doctors. Cloud-base software has been recently introduced to transform and store the data electronically.

After their return a special drive was launched with an activity-cancer counseling camp. Government machinery, press, media, and all means of mass communication were involved to publicize the activity and make people aware about the launch of such services. This envisaged announcing to public that they can report to district hospital for assistance in cancer. The drive also involved educating public on signs of cancer. Patients so reporting was counseled, evaluated, and suggested appropriate treatment by senior oncologist in the presence of a local physician. Patients requiring surgical and radiation treatment were referred to appropriate higher centers. Patients requiring chemotherapy, palliative care, and desirous of starting treatment at district hospitals were assisted and started on support.

Since launch of the program, i.e., over 20 months, more than 120 such camps have been conducted. It has involved evaluation of more than 7000 patients. All these camps are well documented by maintaining complete registration data, and many a times with details of the medical documentation with case summaries.

From no cancer patients attending district hospital, now the number of patients routinely attending cancer services has risen from 20 to 300 per month at different district hospitals. More than 11,000 patients have been registered till date. This proves the decentralization and acceptance by people.

Majority of the districts have started offering regular chemotherapy services as per standard guidelines to the local needy patients. The chemotherapy sessions carried out range from 5 in some districts to more than 100 sessions per month in best performing.

All the services including drugs, as per government policy are not for fee. The other health care services in district hospital are also offered free of cost.

Many centers are regularly admitting patients for palliative care and such admission range from 5 to 50 in a month.

The cancer data created at districts is allowing to understand many epidemiological issues. One of the best performing district (Ujjain) has registered nearly 950 patients (male 481–50.63% and 469 female–49.37%) till date. The distribution of the most common cancers is listed in Tables 1 and 2, with head and neck being the most common in men and breast in female. Esophageal cancer appears to be in large numbers in both males and females. Prostate cancer is a common reporting problem in men whereas in females ovary appears to be very high in list even more than cervix.

Table 1: Distribution of major cancer in female patients (total - 469)

Common cancers	Number	Percentage
Breast cancer	180	38.38
Head and neck	47	10.02
Ovary	43	9.17
Cervix	25	5.33
Esophagus	20	4.26
Leukemia	16	3.41
Lymphoma	16	3.41

Table 2: Distribution of major cancers in male patients (total - 481)

Common cancers	Number	Percentage
Head and neck	141	29.31
Lung	65	13.51
Prostate	30	6.24
Leukemia	26	5.41
Lymphoma	25	5.02
Esophagus	19	3.95
Colorectal	13	2.70

Cancer educational activities are routinely carried out by these doctors including use of media. Cancer camps are widely publicized. Multiple public meetings, rallies, poster exhibitions have been organized through these nodal centers.

Administrative reforms carried to smoothen the process of delivery included, formulation of drug list, purchase process, storage and policies of inter-district hospital transfer of drugs. Existing budgets were utilized.

The physicians have been designated as nodal district cancer officers and have been asked to assist all government run cancer programs including schemes of financial assistance to poor patients.

DISCUSSION

Due to challenges faced in cancer care a model of decentralized care was planned. The model experimented outreach using existing infrastructure. The number of cancer patients registering for care in district hospitals is increasing at high pace. This shows the increasing level of confidence in local hospitals. The regularity of the treatment is increasing. From no patients attending districts, the number has gone to thousands. This reinforces need and acceptance of decentralized care. Continuation of this care for few months shows its sustainability. The number of patients coming forward to continue chemotherapy is increasing and reached a substantial amount. This proves the reproducibility of chemotherapy services at peripheral level under controlled guidance. The cost of the care to the patient is reduced as government hospitals use low-cost drugs and services are free.

The districts have been using counseling camps to advocate cause of cancer. Role of cancer awareness is adequately fulfilled by this model. Increasing number of attending patients suggest that patient if cared locally will participate better in care. Revisits of the patients suggest big counseling role of these physicians. The hospitals are admitting patients for palliative care now. This will help major issue of cancer care.

It is already coming with unexpected surprises to the epidemiology. Tobacco-related cancers still dominate both among males and females. The national registry has cervix cancer as commonest malignancy. This short data confirms changing trends in incidence of ovarian cancer.[4] This may be associated with more people reporting in this particular district.

To summarize following roles are being played by these physicians leading community-based cancer awareness and prevention education, cancer screening, and early detection services, making referral channel to appropriate tertiary centers, administering basic chemotherapy services, conducting posttreatment surveillance and providing palliative care and end of life services.[5] The model is meeting

its main goal of decentralization of cancer care services to the peripheral level.

This innovative model of empowerment of the existing infrastructure and human resources serves all the roles as advised by WHO in healthcare management and thus may form a basis for disease control programs. It has capacity of duplicability in countries with limited capabilities.

CONCLUSION

This innovative healthcare delivery model in cancer appears to be allowing to decentralize cancer services to the periphery using existing infrastructure. This model can easily be duplicated in other administrative areas. It can partially solve the problem of human resources and delivery.

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