Speech Transcript of Dr. K SRINATH REDDY at OSMECON - 2017

“Dignitaries on the dias, luminaries in the audience, distinguishing faculty, student organizers, student delegates, Ladies and Gentlemen. It's indeed a matter of great pleasure and pride to be back at Osmania Medical College where I had some of the best years of my life. When I am asked by anybody, even in Delhi, as to where I am from, I say I lived a longer part of my life in Delhi, but the better part of my life in Hyderabad. One of the reasons for this is the time I spent as a student at Osmania Medical College. One of my seniors Dr. Yadagiri Chary, a renowned surgeon of Hyderabad, senior to me, used to sing ”Medicola thalamaanikamai velugunu Osmania” adi vintunte entho utthejam kaligedi, innalla tharvatha ee college pranganam loki punarpravesham chesina tharvatha vollu pulakarinchindante ascharyam ledu.

I asked Dr.Pariplavi whether Osmania has a college anthem. She said no, perhaps you should get back Dr. A Y Chary to get him to write the anthem. Thank you very much for inviting me to this function. The young student organiser was very nervous and apologetic when I was called onto the stage and the lights went off but I told him that there would be no better expression than the fact that you are “delighted” to see me, now that we have the lights on, let me proceed.

I am proud of this particular research symposium, OSMECON, which is being organized by Osmania. As Dr. Gopala Krishna Garu said this undergraduate

medical research symposium was not a feature of Osmania Medical College in the days that he and I studied.

When we were in Physiology we organized for our class, a research symposium in partnership with the National Institute of Nutrition, the director who then was Dr.Gopalan and our Physiology Professor Dr.Simhadri. However, we never had a good research symposium in which research methodology as well as conducted research were discussed in depth by undergraduate students and this must become part and parcel of the learning process in a medical college.

Now it's very clear that this particular symposium, which is being organised, is very important because it is not only looking at the mechanics of research but also looking at how research can be translated into practice, both clinically and public health, you should also be looking at how it can be translated into policy. So from research to practice which also means evidence and empathy-based clinical care, I see that there is one of the sessions on empathic clinical care and that is essential because even as we must benefit from technology, I am glad technology is an important feature in this conference. We should not permit technology to build a wall between the clinical care providers and the patients, the families and the community, The further we get away from the pulse of the patient and as we become deaf in our ears to what the patient is narrating then we have the major problem in the ethos of our profession and that is where we must apply correctives even in terms of empathetic care.

Some centuries ago, someone said, “A physician has to cure some, relieve most, but comfort all”. Unless the physician is empathetic and comforts everyone who seeks care then the physician would be failing in the duty, so that element is also important. I am happy that you have chosen adolescent health as one of the important themes of this particular conference. Indeed adolescent health paved the wayside even at the millennium development goals. We had one goal on child health, one goal on maternal health and adolescents including adolescent girls. The vital link between child health and maternal health was completely left out. Now that missing link is not being brought back into the sustainable development goals and also to the national program, our national program on reproductive, maternal and neonatal child health now has a tough age that is adolescent age and adolescence is a very important factor which is a vital link

in the life process of an individual. But it is also important that we recognize the promises and perils of adolescents, quite often I have been told based on neurobiology that the adolescent brain is an immature brain that is because some areas of the cortex are still maturing but the adolescent brain is rapidly pruning of multiple synapses and re-adapting with fresh synapses before it's still in the process of maturation.

I would rather describe it not as an immature brain but as an evolutionary necessity and revolutionary success because if the adolescent brain is not rapidly pruning information and acquiring new information from new synapses, there will be no progress, no improvement in knowledge, no application of that knowledge for fresh enterprise and discovery. The adolescent brain is also a risk-taking brain that prizes immediate rewards to the future hazards at risk again will also be portrayed as a sign of immaturity. I would like to differ because if I take adolescence and young adulthood if there is no risk-taking, there is no enterprise, there is no discovery, there is no progress, the society will stagnate in its state.

Whether it is the young Bill Gates or the entrepreneurs of Silicon Valley, it is that risk-taking that advances civilization, but it also comes with perils. The risky behaviour is rash driving, alcohol addiction, tobacco and all kinds of other hazards. It's true to see in the newspapers that Hyderabad is now becoming infamous for drug-taking problems in schools. Now this is where we have temporarily conditioned the course of adolescence so that we move in all directions that are healthy and health-promoting and at the same time have enough enterprise for successful careers.

I also note the emphasis on stress in this particular convention instead of imparting as far as Physiology and Evolutionary Biology and stress is concerned, I am sure that we will discuss it sufficiently in workshops. But where sometimes acute stress is a necessary survival response like you have to be alert and jump after the bus that is coming towards you, you can't say I am going to be quite relaxed. At the same time, chronic stress and repetitive acute stress weighing down our body is going to be dangerous and that's why we have to deal with it. As medical students, We are born to have some stress,

particularly at the time of examinations and we all have experienced that, but it is the right amount of stress that is important.

I always look at stress as a stringed musical instrument, if the strings are too loose you can't make music, if the strings are too taut, you can't make music. You need the right amount of stress to get the right music so that is how you have to adapt yourselves, that is as far as the teams of this conference are concerned.

Now we come to the actual topic of research because that is what we are addressing at this point. I am not going to talk about the National health policy or universal health coverage perhaps about the time, let me focus on research. When Dr.Pariplavi asked me several times along with your students to write a message for the Souvenir. I thought messages in the Souvenir were seldom read. Only a formality for the students to gather money from the sponsors. I did write a piece which tells of my views on romance, the rigour, the rewards and the risks of research so those of you who would like to read it, please read it. I am not going to repeat it here but let me first address a question as to why students like you must be interested in research because you are going to be acquiring it as producers of research and knowledge, you are going to be requiring it as consumers of knowledge. People will apply that knowledge in many many ways and practice and certainly even the critics and evaluators of knowledge will be asked to evaluate research projects for funding. You will be asked to publish research journals. You have to understand research methodology with all its complexity. Now the three things about research that you must understand:

1. One is the Purpose of research
2. Second is the Process of research and the
3. Third is the Products of research

Now the purpose of research is not self-gratification. We may want to publish, we may want to get a great reputation as scientists but that is not the fundamental purpose of research. The fundamental purpose of research is social benefit and advancing new knowledge. Unless our research is straight up to help society and to provide benefits to society in multiple fields, in our case, in

terms of better health, it is failing in its duty. As I said, we have social relevance, science is sterile and at the same time policies and programmes and clinical practice guidelines that are not based on the firm foundation for science will stumble on plain feet.

So you need to link research with applications at the same time you need to open up new areas. Therefore first we need some open-ended research that can explore new ideas and open new frontiers. However much of the research is to test our hypothesis not just knowledge, A fishing expedition for kite flying. That brings us to the process of research, the process of research begins first by asking the right kind of questions. What is your research question? Unless you frame your research question correctly, your research will be misguided. All of the health research is essentially causation research. Does this risk factor cause this disease? Does this medicine cause improvement and reduction in mortality? Does this diagnosis test cause a disease to be better diagnosed or earlier diagnosed? This is all causation research, but the causation research content includes the number of factors, chance which you discuss always is observed by chance. What is the probability observed by chance and all that is your p-value? The others are bias, confounding, and the effect of other co-variants. How do you adjust for all the findings that the value of the independent factor that you are studying? All of these require an understanding of research methodology and that is why it is important to understand right from your student days but even after your post-graduation, please understand that without good research methodology, research however meticulously done is likely to fall.

We see even now, even in leading journals, several articles that are published with great fanfare have been refused or even withdrawn a few years later because the methodology was not very good. Therefore we have to ask the right questions but also have to be very objective in conducting our research. The philosopher Karl Popper said the scientific method is to gather facts systematically, conjuncture a hypothesis, and then set about proving the hypothesis wrong. That means you are supposed to try and prove your hypothesis wrong and accept it as being possibly true only when you do your best to prove it wrong or cannot prove it wrong. That means the scientist has to be very sceptical about his/her own potential bias and hypothesis and that's why the whole idea of alternate hypothesis comes in. Of course, the role of chance is

important because chance is the eternal alternate hypothesis. But then we often find a lot of speculations from very minor facts, we find a huge amount of speculations in the journals that get distorted in the media and then wrong messages are sent out to the public and it becomes the duty of the medical profession to not only understand the research but to interpret it correctly to the media and public. That's why again you must understand research.

Mark Twain as you know the famous humourous writer, once did a couple of pieces on the "Length of the Missippi River" and another on the small fact, he said he could prove that the moon is hotter than the sun and the sun is cooler than the moon. Then he said something is fascinating about science, you can generate vast but wholesale returns of conjecture from the investigation of facts.

A gentleman called Danikke who used to be a comedian in Hollywood films in the 1950s said the only way scientists get their exercise is by jumping to conclusions. We don't want to be that kind of scientist, we want to be scientists who are honest in our work, question ourselves, question our colleagues and ultimately advance to the nearest approximation. There again too much data drenching is not correct. We become worshipers of this p-value and then see tables of this p-value. The problem is each time you are examining a data set for a p-value, you are playing the chance and you can generate 20 different p-values and get 1 or 2 out of 1000 by chance. Therefore you have to be very careful about that and the perils of multiple significance are quite huge so you must make sure that your statistical power is adequate to discover the truth when it is there. There was a very good trial in the 1970s on ordinary care units. Do they save patients or not? Compared to a general medical unit, they did a study and said no, the ordinary care units are useless they have no additional benefit over a general medical unit. It was found that they did not have adequate statistical power. They calculated their sample size based on an expected 50% reduction in mortality. So even with the 25-30% reduction in mortality, the study misses it. So you have to have adequate statistical power. But then if you inflate your sample size too much even minor effects turn out to be statistically significant. That is why you must also find out what the actual effect size is, and whether something statistically significant is also clinically significant. What are the confidence intervals? What is the number needed to cheat? All of these are part of the research methodology, everybody will see only the p-value. All

of that is very important, Similarly when you look at risk assessment, we often talk about relative risk. Relative risk tells you how much a person is exposed to a particular risk factor or an intervention and is developing a disease or benefiting from the intervention as opposed to somebody who is not. That's about groups of patients but it doesn't tell you what that particular individual is going to have. That is where absolute risk comes in. It doesn't tell you how prevalent the risk factor is in the population and how important it is to control it for public health reasons. That is where something called population-attributable risk comes in. I don't want to take a statistics class here but the fact is unless you understand this, it is easy to get misguided by publications. If you have to be an intelligent interpreter of research evidence from journals, then you have to understand research methodology.

The Indian Council of Medical Research is now proposing to start courses in research methodology among 50 government medical colleges all across the country. I believe Osmania should connect with Dr. Soumya Swaminathan and ensure that Osmania too is part of the troop.

Similarly, in the case of diagnostic tests, we often believe if a diagnostic test is positive, the disease is there. If it is negative, the disease is not there. You know that is not true, it is all estimating probabilities in terms of specificity, sensitivity, predictive values, likelihood ratios, receiver operating curve and so on. So in all our lives, we are dealing with uncertainties and nowhere so more than in medicine. So what do we need to do to narrow down the estimates and increase the probability that we have chosen the truth? So that is where you have to understand the research methodology and apply it appropriately. At the same time, you have to look at the incremental benefits and cost-effectiveness. You may have 10 different diagnostic tests but throwing all of them at the patient may not be cost-effective. So when you apply a couple of tests, what is the probability that you have reached that particular disease? What is the incremental value of adding some more tests? Do these tests simultaneously or sequentially, all of this is the application of your research methodology. So all of this is becoming very important whether you are a practising clinician or you are conducting a clinical trial or trying to publish data.

Finally, let me tell you the three important questions that you have to ask:

1. SO what question
2. THEN what question
3. WHAT then question

So what question is when you frame a research question, it may appear very attractive to you but then when I say what will be the implication of this if I find the result, will it make a reasonable difference in clinical practice, public health, and health policy? If it does not, it is not worth investing money, not worth investing your time. So the rationale has to be very strong there. Then how do you translate that research results into standard management guidelines, and clinical care pathways and then try building that evidence into regular clinical practice? and then how do you evaluate the difference that has been made as the clinical care guidelines are to be adopted as it made a difference to patient management, as it made in difference to patient outcome. All of those evaluation parts are also important.

All of these are part of the research pathway and unless you begin to appreciate this from your undergraduate career, by the time you get into post-graduation and I use the word force, the force to do research as a PG medical student or a medical MS degree or MSS degree or a DNB programme of the National Board of Examination. You will go through the research mechanically without understanding the problems of that research and if we produce bad research results then we are polluting the future and causing more harm to positive health. On the other hand, if young medical students appreciate the importance of conducting good medical research and of critically appraising publish research, we need to be very careful in adopting the right kind of research in medical and clinical practice. Then you will advance in science, advance in health policy and advance in health practice. You will be making a huge difference in society which is what we are all about.

So like Henry the 8th, said to be his 2nd wife, I will not keep you long, I have come to the end. I will only say as Loius Pasteur said to his research fellows, "Keep your enthusiasm but let strict verification be its constant companion"

Thank you! All the best!”