

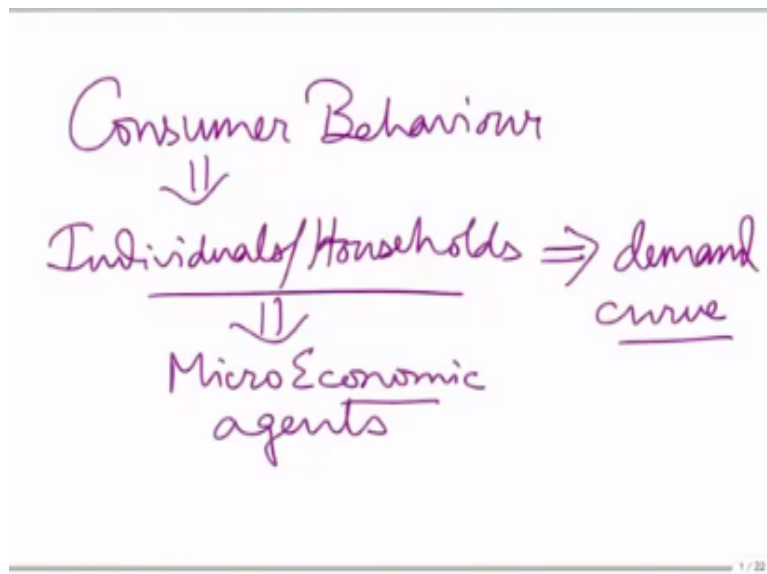
Economics of Health and Healthcare
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Lecture – 03
Utility

So, hello everyone, in this session, we will discuss consumer behaviour and then slowly, we will move to the demand and supply and the market mechanism of Health economics, so as I said that we will try to give a brief introduction about or a brief idea about the concepts of health economics. So, and health economics basically, deals with micro economic concepts.

So, when we talk about microeconomics, going back to the previous session, we have learned that microeconomics is primarily deals with the individuals, the households or at the small community level.

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So, in consumer behaviour, consumers are primarily, the individuals or the households or households and these are the micro economic agents or players yes, therefore when we discuss consumer behaviour, we are discussing a micro economic concepts and we try to understand through this consumer behaviour that how or what happens behind the scene, when a consumer or an individual tries to make their demand, so or a demand curve yeah.

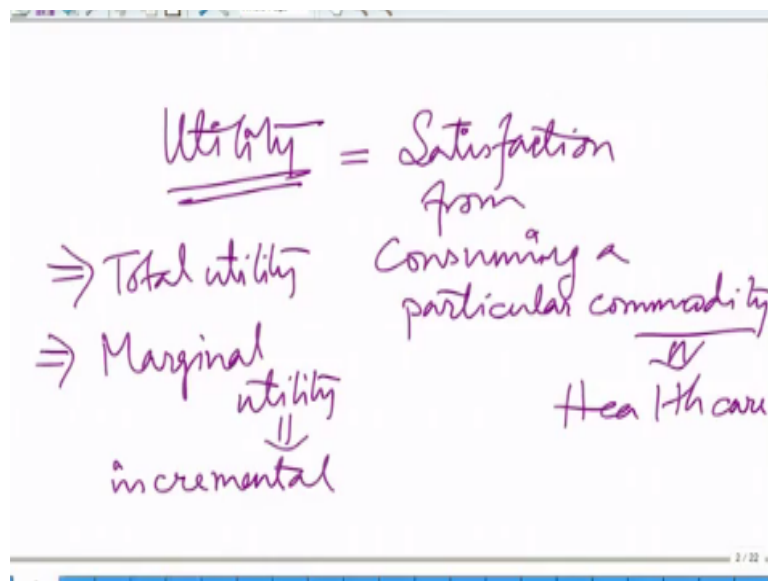
So, how basically, a consumer determines their demand or demand curve? Now, my demand for rasgulla will be different from your demand now, I am from Bengal, I love sweet, I can; I

demand highly for rasgulla, you may demand samosa, yeah but how we demand rasgulla or samosa that is primarily comes from the satisfaction through consuming that particular commodity.

Now, in health economics what is my commodity? My commodity is health care now, my demand for a particular health care will be different from a demand from a different person from a different socio economic characteristics or a particular stage, geographical location and so on and so forth, several variables which are determining their health status and finally their demand for health care.

Now, this demand for health care will derive; will be derived from the satisfaction I get from that particular health care or the kind of health care, I will require, I will required that I will get higher satisfaction, I do not required that my satisfaction will be lower or I do not feel that I require that from my awareness, my satisfaction will be lower and my satisfaction is lower again my demand curve is altered.

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We will see how demand curve is altered here, when I talk about satisfaction in economics, satisfaction is known as utility, I will not take you through the nitty-gritties of utility, so utility is basically satisfaction is the same thing I should not keep this arrow is the same thing its satisfaction. In economics, utility is the satisfaction from consuming a commodity; a particular commodity yes, here my commodity is healthcare.

Yes, now the healthcare can be an apple, if that is the necessity for my health, it can be a medicine, it can be a visiting a doctor, it can be availing an operation theatre, it can be anything yeah or it can eventually be a cigarette, yeah because the cigarette determines my

healthcare or health status, so the total utility is the total satisfaction, I derive from a particular process of treatment, know.

So, we have a concept of total utility to keep it simple, I will tell; I will take you to the general examples such as consuming an apple or consuming a rasgulla something like that which is easier to understand, which we can actually see you know, if you; so the total utility is the total satisfaction, if I take 5 apples altogether that is my total utility, yeah and the marginal utility is the incremental utility.

Now, what does this word incremental means? Incremental means if I consume one additional unit of that particular commodity, one extra unit of that particular commodity, how much my satisfaction level, my utility level will change yes, so when if I can name my commodity as X and I can say, X_i ; i denoting, so my commodity as X_i , I will just wipe this out.

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$$\text{Commodity} = X_i$$
$$MU_i = \frac{\partial U}{\partial X_i}$$

If I name the commodity as X_i ; as X and i is the number of unit I am consuming of that particular commodity, so X_1 means the first apple, X_2 means the second apple, X_3 means the third Apple so on and so forth yeah, so my marginal utility, I can keep it as like this marginal utility is the $\frac{\partial U}{\partial X_i}$, yeah, so that means, I can say marginal utility from third unit that means, if when I move from second unit to third unit, I take the third apple after consuming the second apple.

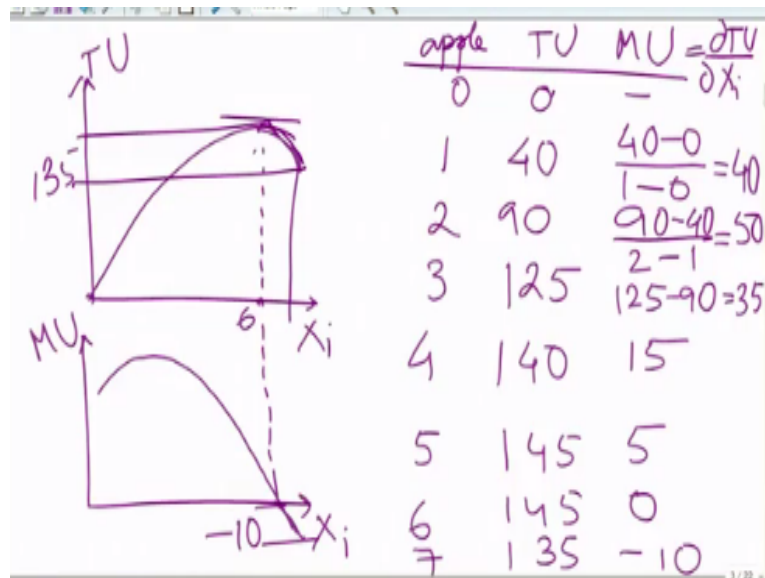
How much change in my satisfaction level has happened, so that amount of change that increment it can eventually, be negative right that change in my satisfaction level based on this additional unit is my marginal utility, yeah so if I get another clinic in my locality, how

much satisfied; whether my satisfaction increases, whether my satisfaction remain constants or decreases is; will show if there is another dental surgeons clinic.

And whether my satisfaction is increasing or decreasing or keeping same that will determine my or that will show my demand for dental clinics, if I am very happy that means my; my, the condition of teeth are not really good, yeah or if I am; I am least bothered there can be 2 things; one, there are already too many dental clinics, second I do not have a demand for the; I do not have a tooth problem at all or anybody in my household.

So, when I talk about the; there are already too many, so what happens like how; how is it effective or how is it interesting. In general, if we plot a particular marginal utility, I will try to show you with numbers as well, if I plot at marginal utility.

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Then, we can see that generally, total utility increases, it increases from 0 because if I do not consume a particular community, I do not have any utility, I do not have a satisfaction, so it increases from 0, increases, increases, increases and then given stagnant eventually, it may fall yeah, it would not fall sorry, so it increases, increases, increases at; and becomes constant yeah, this is my total utility with commodity X.

So, when I; when I consume you know one extra unit of apple or rasgulla, if I like that first it is increasing, it is increasing, it is increasing and then I am saturated, I do not want it anymore yeah, so even if I kind of consume them even if I am not liking it, it remains constant because it is not adding up to my satisfaction, yeah but it is a total, so whenever I am consuming something, so it can be 0 satisfaction.

But it cannot be negative satisfaction, so it is not coming down, so it will remain stagnant at a certain level, it would not go up any more eventually, when I plot marginal utility, so initially it will increase and then it will fall and then it can go to negative that means, if it is negative that means, I am not at all enjoying and even if I am taking my extra apple, it is actually not increasing my satisfaction it is eventually, decreasing my satisfaction yeah, the total satisfaction.

So, in that part it can be stagnant or come down, when it starts going down to 0, now if I take this example, so when it starts; when it is here, you can see it is stagnant at this point and then when it is going down, it is negative yeah, marginal utility is negative. If I take an example, so say by consumption of apple is 0 and I have to take the doctor has said that I need to take apple that is my medicine now.

Now, I need to gain some kind of immunity, strength, so my total utility will be 0, I have not taken anything, if my apple is 1, my total utility will be say 40, my second apple; total utility is 90 yes, I do not like apple much, 2 apples in a day is more than enough yeah, third; I can take it as 125, fourth; let us take 140, fifth; 145, sixth; 145, seventh; 135. Now, let us go to the marginal utility.

So, first 0, I have not taken anything, so there is no change, I just took the first apple, so how much change is happening with my satisfaction, so the change in satisfaction is $40 - 0$, if you remember marginal utility is $\Delta \text{ of total utility} / \Delta \text{ of } X_i$ that is apple so, $\Delta \text{ of } X_i$ over here is; $\Delta \text{ of total utility over here is } 40 - 0$, the satisfaction I get from the first apple and the satisfaction I get without having any apple.

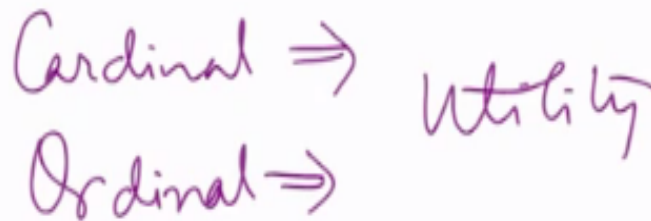
So, 1 and the ΔX_i that change in number of apple I am consuming is $1 - 0$, so this is $40/1$ is 40, so this is my marginal utility, the additional utility; I gained by consuming one extra unit of apple. The second, when I take the second apple, the marginal utility is $90 - 40 / 2 - 1$ because this 40 utility I gained from this first apple and this 90 marginal utility I gained from this second apple.

So, the difference in the consumption of the first apple and the second apple by the number of apples I have consumed, so again this is $50/1$ is 50 and we can continue the same, so and if the number of apple is increasing just by 1 unit, so we can just estimate the change in the total utility because that the change in the total utility is always divided by that 1 unit because every time I am incurring a change in my total utility that is primarily because I am increasing my consumption by 1 unit.

So, you know, so I do not have to do any complicated unitary method, so it is like just the subtraction between the total utility, so I get here $125 - 90$ is 30 from the third; I mean 35 from the third apple and then for the fourth 15, for the fifth 5, for the sixth, 0; $145 - 145$, maybe I am here on the sixth apple you know, here it is sixth apple yeah and for the seventh, it has come down yeah, this part is coming down, this part is coming down $- 10$, this is coming down.

So, this is 145 and this is 7, this is 135 and this is $- 10$, yes here my marginal utility is negative, I do not want any more apple, my satisfaction level is going down yeah, so this is; this is how I generally, you know kind of measure my satisfaction level. Now, how do we get this number, these are very abstract you know, so your utility is basically measured in a unit called Util but this is very abstract yeah this is hypothetical.

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Cardinal \Rightarrow Utility
Ordinal \Rightarrow Utility

So you can give your own number yeah, so you can measure it in your own number, so but otherwise there are 2 measures of utility, one is cardinal utility and ordinal utility, I am not going into that much, cardinal utility and ordinal utility, you have 2 measures of utility. In one you can measure the utility based on some numbers and in ordinal utility, you can order them you know whether you have higher satisfaction, lower satisfaction and all so, ordinal utility, and thank you.