

$$(2.6.1) \quad P(\text{transmission in } [t, t + \Delta t]) = k\alpha\Delta t \frac{X}{X + Y};$$

where k = number of contacts per month,
 α = probability of contact causing AIDS,
 X = number of susceptibles,
 Y = number of infectives.

To get the expected total increase in the infective population during $[t, t + \Delta t]$, we multiply the above by Y , the number of infectives:

$$(2.6.2) \quad \Delta E(Y) = YP(\text{transmission in } [t, t + \Delta t]).$$

For large populations, we can assume, under fairly general conditions, that the expected total change in Y is very nearly equal to a deterministic Y ; that is,

$$(2.6.3) \quad \Delta E(Y) \approx \Delta Y.$$

Letting Δt go to zero, this yields immediately

$$(2.6.4) \quad \frac{dY}{dt} = \frac{k\alpha XY}{X + Y} \quad \text{and} \quad \frac{dX}{dt} = -\frac{k\alpha XY}{X + Y}.$$

marginal increase in the emigration from the infective population due to AIDS, γ , from sickness and death. Thus, we have the improved differential equation model

$$(2.6.5) \quad \frac{dY}{dt} = \frac{k\alpha XY}{X + Y} - (\gamma + \mu)Y \quad \text{and} \quad \frac{dX}{dt} = -\frac{k\alpha XY}{X + Y} + \lambda - \mu X,$$

where γ = AIDS death rate,
 λ = immigration rate,
 μ = emigration rate,

and all time rates are in months. For early stages of the disease, $X/(X + Y) \approx 1$. Accordingly, we may write the approximation

$$(2.6.6) \quad \frac{dY}{dt} \approx (k\alpha - \mu - \gamma)Y.$$

This gives us the solution

$$(2.6.7) \quad Y = Y(0) \exp[(k\alpha - \mu - \gamma)t].$$

Now, we shall use some rough guesses for some of the parameters in the equations above. We shall assume that, absent AIDS, the total target population is 3,000,000. We shall assume that an individual stays in this population an average of 15 years (yielding $\mu = 1/(15 \times 12) = 0.00556$). We shall use as the average time an infective remains sexually active 10 months (yielding $\gamma = 0.1$). To maintain the population of 3,000,000 (absent AIDS) then, we require

$$(2.6.8) \quad \frac{dX}{dt} = \lambda - \mu X = 0,$$

or $\lambda = 16,666$. Now, if we combine these figures with early death data from AIDS, we can use the approximation for Y to obtain an estimate for $k\alpha \approx 0.263$. Considering that some values of k which have been variously reported range up to well over 100 per month, we are struck by the incredibly low probability of infection per contact (α) between an infective and a susceptible. This rate is exceptionally low, probably well below .01. This is very low, when compared to other venereal diseases, where values of this probability in excess of .2 are not unusual. It is this very low probability of transmission of AIDS which distinguishes its epidemiological properties and gives the key to the current AIDS epidemic. The low value of α indicates virus in some quantity is required for transmission of the disease in most cases. This means that

2.6. A SIMPLE MODEL OF AIDS

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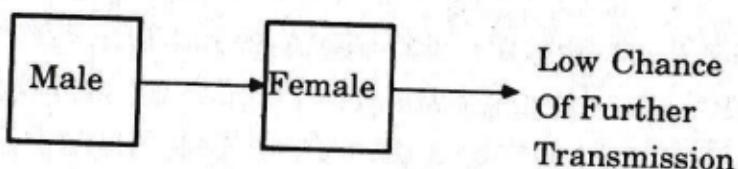


Figure 2.6.1. Heterosexual transmission pattern.

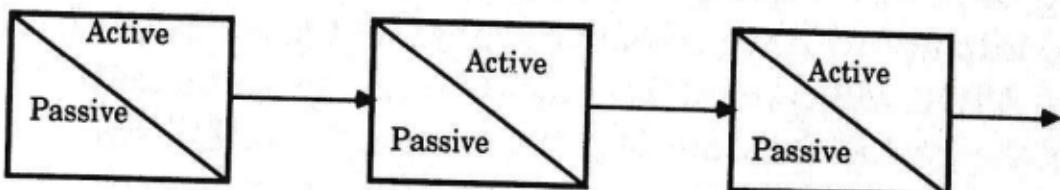


Figure 2.6.2. Homosexual transmission pattern.

There are thus three equal unions between persons of corresponding dimensions, and there are six unequal unions, when the dimensions do not correspond, or nine in all, as the following table shows:

EQUAL.		UNEQUAL.	
MEN.	WOMEN.	MEN.	WOMEN.
Hare.	Deer.	Hare.	Mare.
Bull.	Mare.	Hare.	Elephant.
Horse.	Elephant.	Bull.	Deer.
		Bull.	Elephant.
		Horse.	Deer.
		Horse.	Mare.

There are also nine kinds of union according to the force of passion or carnal desire, as follows:

MEN.	WOMEN.	MEN.	WOMEN.
Small.	Small.	Small.	Middling.
Middling.	Middling.	Small.	Intense.
Intense.	Intense.	Middling.	Small.
		Middling.	Intense.
		Intense.	Small.
		Intense.	Middling.

Kama Sutra (Snippets)

Author: Vatsyayana

Translator: Shivaram Parashuram Bhide
Sir Richard Francis Burton
Bhagavanlal Indrajit

Which might otherwise be called a treatise
on men and women, their mutual
relationship, and connection with each other.

It is a work that should be studied by all,
both old and young; the former
will find in it real truths, gathered by
experience, and already
tested by themselves, while the latter will
derive the great advantage
of learning things, which some perhaps may
otherwise never learn at all,
or which they may only learn when it is too
late to profit by the learning.

It can also be fairly commended to the
student of social science and of
humanity, and above all to the student of
those early ideas, which have
gradually filtered down through the sands of
time, and which seem to
prove that the human nature of to-day is
much the same as the human
nature of the long ago.

The following are the arts to be studied, together with the Kama Sutra:-

1. Singing.
2. Playing on musical instruments.
3. Dancing.
4. Union of dancing, singing, and playing instrumental music.
5. Writing and drawing.
6. Tattooing.
7. Arraying and adorning an idol with rice and flowers.
8. Spreading and arraying beds or couches of flowers, or flowers upon the ground.
9. Colouring the teeth, garments, hair, nails, and bodies, i.e.., staining, dyeing, colouring and painting the same.
10. Fixing stained glass into a floor.
11. The art of making beds, and spreading out carpets and cushions for reclining.
12. Playing on musical glasses filled with water.
13. Storing and accumulating water in aqueducts, cisterns and reservoirs.
14. Picture making, trimming and decorating.
15. Stringing of rosaries, necklaces, garlands and wreaths.
16. Binding of turbans and chaplets, and making crests and top-knots of flowers.
17. Scenic representations. Stage playing.
18. Art of making ear ornaments.
19. Art of preparing perfumes and odours.
20. Proper disposition of jewels and decorations, and adornment in dress.

21. Magic or sorcery.
22. Quickness of hand or manual skill.
23. Culinary art, i.e., cooking and cookery.
24. Making lemonades, sherbets, acidulated drinks, and spirituous extracts with proper flavour and colour.
25. Tailor's work and sewing.
26. Making parrots, flowers, tufts, tassels, bunches, bosses, knobs, &c., out of yarn or thread.
27. Solution of riddles, enigmas, covert speeches, verbal puzzles and enigmatical questions.
28. A game, which consisted in repeating verses, and as one person finished, another person had to commence at once, repeating another verse, beginning with the same letter with which the last speaker's verse ended, whoever failed to repeat was considered to have lost, and to be subject to pay a forfeit or stake of some kind.
29. The art of mimicry or imitation.
30. Reading, including chanting and intoning.
31. Study of sentences difficult to pronounce. It is played as a game chiefly by women and children, and consists of a difficult sentence being given, and when repeated quickly, the words are often transposed or badly pronounced.
32. Practice with sword, single stick, quarter staff, and bow and arrow.
33. Drawing inferences, reasoning or inferring.
34. Carpentry, or the work of a carpenter.
35. Architecture, or the art of building.
36. Knowledge about gold and silver coins, and jewels and gems.
37. Chemistry and mineralogy.
38. Colouring jewels, gems and beads.
39. Knowledge of mines and quarries.
40. Gardening; knowledge of treating the diseases of trees and plants,

-
- of nourishing them, and determining their ages.
41. Art of cock fighting, quail fighting and ram fighting.
42. Art of teaching parrots and starlings to speak.
43. Art of applying perfumed ointments to the body, and of dressing the hair with unguents and perfumes and braiding it.
44. The art of understanding writing in cypher, and the writing of words in a peculiar way.
45. The art of speaking by changing the forms of words. It is of various kinds. Some speak by changing the beginning and end of words, others by adding unnecessary letters between every syllable of a word, and so on.
46. Knowledge of language and of the vernacular dialects.
47. Art of making flower carriages.
48. Art of framing mystical diagrams, of addressing spells and charms, and binding armlets.
49. Mental exercises, such as completing stanzas or verses on receiving a part of them; or supplying one, two or three lines when the remaining lines are given indiscriminately from different verses, so as to make the whole an entire verse with regard to its meaning; or arranging the words of a verse written irregularly by separating the vowels from the consonants, or leaving them out altogether; or putting into verse or prose sentences represented by signs or symbols. There are many other such exercises.
50. Composing poems.
51. Knowledge of dictionaries and vocabularies.
52. Knowledge of ways of changing and disguising the appearance of persons.
53. Knowledge of the art of changing the appearance of things, such as

making cotton to appear as silk, coarse and common things to appear as fine and good.

54. Various ways of gambling.
55. Art of obtaining possession of the property of others by means of ~~muntras~~ or incantations.
56. Skill in youthful sports.
57. Knowledge of the rules of society, and of how to pay respects and compliments to others.
58. Knowledge of the art of war, of arms, of armies, &c.
59. Knowledge of gymnastics.
60. Art of knowing the character of a man from his features.
61. Knowledge of scanning or constructing verses.
62. Arithmetical recreations.
63. Making artificial flowers.
64. Making figures and images in clay.

The following are the things to be done occasionally as diversions or amusements.

1. Holding festivals in honour of different Deities.
2. Social gatherings of both sexes.
3. Drinking parties.
4. Picnics.
5. Other social diversions.

The following women are not to be enjoyed:--

A leper.
A lunatic.
A woman turned out of caste.
A woman who reveals secrets.
A woman who publicly expresses desire for sexual intercourse.
A bad-smelling woman.
A woman who is a near relation.
A woman who is a female friend.
A woman who leads the life of an ascetic.

The following are the kind of friends:--

One who has played with you in the dust, _i.e._, in childhood.
One who is bound by an obligation.
One who is of the same disposition and fond of the same things.
One who is a fellow student.
One who is acquainted with your secrets and faults, and whose faults
and
secrets are also known to you.
One who is a child of your nurse.
One who is brought up with you.
One who is an hereditary friend.
These friends should possess the following qualities:--
They should tell the truth.
They should not be changed by time.
They should be ~~favourable~~ to your designs.

Men learned in the humanities are of opinion that love is of four kinds,
viz.:

1. Love acquired by continual habit.
2. Love resulting from the imagination.
3. Love resulting from belief.
4. Love resulting from the perception of external objects.
 - (1). Love resulting from the constant and continual performance and habit, as for instance the love of sexual intercourse, the love of hunting, the love of drinking, the love of gambling, etc., etc.
 - (2). Love which is felt for things to which we are not habituated, and which proceeds entirely from ideas, is called love resulting from imagination, as for instance, that love which some men and women and eunuchs feel for the Auparishtaka or mouth congress, and that which is felt by all for such things as embracing, kissing, etc., etc.
 - (3). The love which is mutual on both sides, and proved to be true, when each looks upon the other as his or her very own, such is called love resulting from belief by the learned.
 - (4). The love resulting from the perception of eternal objects is quite evident and well-known to the world, because the pleasure which it affords is superior to the pleasure of the other kinds of love, which exists only for its sake.

The causes of a woman rejecting the addresses of a man are as follows:

1. Affection for her husband.
2. Desire of lawful progeny.
3. Want of opportunity.
4. Anger at being addressed by the man too familiarly.
5. Difference in rank of life.

6. Want of certainty on account of the man being devoted to travelling.
7. Thinking that the man may be attached to some other person.
8. Fear of the man's not keeping his intentions secret.
9. Thinking that the man is too devoted to his friends, and has too great a regard for them.
10. The apprehension that he is not in earnest.
11. Bashfulness on account of his being an illustrious man.
12. Fear on account of his being powerful, or possessed of too impetuous passion, in the case of the deer woman.
13. Bashfulness on account of his being too clever.
14. The thought of having once lived with him on friendly terms only.
15. Contempt of his want of knowledge of the world.
16. Distrust of his low character.
17. Disgust at his want of perception of her love for him.
18. In the case of an elephant woman, the thought that he is a hare man, or a man of weak passion.
19. Compassion lest any thing should befall him on account of his passion.
20. Despair at her own imperfections.
21. Fear of discovery.
22. Disillusion at seeing his grey hair or shabby appearance.
23. Fear that he may be employed by her husband to test her chastity.
24. The thought that he has too much regard for morality.

The following are the men who generally obtain success with women.

1. Men well versed in the science of love.
2. Men skilled in telling stories.
3. Men acquainted with women from their childhood.
4. Men who have secured their confidence.
5. Men who send presents to them.
6. Men who talk well.
7. Men who do things that they like.
8. Men who have not loved other women previously.
9. Men who act as messengers.
10. Men who knew their weak points.
11. Men who are desired by good women.
12. Men who are united with their female friends.
13. Men who are good looking.
14. Men who have been brought up with them.
15. Men who are their ~~neighbours~~.
16. Men who are devoted to sexual pleasures, even though these be their own servants.
17. The lovers of the daughters of their nurse.
18. Men who have been ~~lately~~ married.
19. Men who like picnics and pleasure parties.
20. Men who are liberal.
21. Men who are celebrated for being very strong (Bull men).
22. Enterprising and brave men.
23. Men who surpass their husbands in learning and good looks, in good

quality, and in liberality.

24. Men whose dress and manner of living are magnificent.

The following are the women who are easily gained over.

1. Women who stand at the doors of their houses.

2. Women who are always looking out on the street.

3. Women who sit conversing in their neighbour's house.

4. A woman who is always staring at you.

5. A female messenger.

6. A woman who looks sideways at you.

7. A woman whose husband has taken another wife without any just cause.

8. A woman who hates her husband or who is hated by him.

9. A woman who has nobody to look after her, or keep her in check.

10. A woman who has not had any children.

11. A woman whose family or caste is not well known.

12. A woman whose children are dead.

13. A woman who is very fond of society.

14. A woman who is apparently very affectionate with her husband.

15. The wife of an actor.

16. A widow.

17. A poor woman.

18. A woman fond of enjoyments.

19. The wife of a man with many younger brothers.

20. A vain woman.

21. A woman whose husband is inferior to her in rank or abilities.

22. A woman who is proud of her skill in the arts.

23. A woman disturbed in mind by the folly of her husband.
24. A woman who has been married in her infancy to a rich man, and
not
liking him when she grows up, desires a man possessing a disposition,
talents, and wisdom suitable to her own tastes.
25. A woman who is slighted by her husband without any cause.
26. A woman who is not respected by other women of the same rank
or
beauty as herself.
27. A woman whose husband is devoted to ~~travelling~~.
28. The wife of a ~~jeweller~~.
29. A jealous woman.
30. A covetous woman.
31. An immoral woman.
32. A barren woman.
33. A lazy woman.
34. A cowardly woman.
35. A humpbacked woman.
36. A dwarfish woman.
37. A deformed woman.
38. A vulgar woman.
39. An ill-smelling woman.
40. A sick woman.
41. An old woman.

Money is got out of a lover in two ways, viz.:

By natural or lawful means, and by artifices. Old authors are of opinion that when a courtesan can get as much money as she wants from her lover, she should not make use of artifice. But Vatsyayana lays down that though she may get some money from him by natural means, yet when she makes use of artifice he gives her doubly more, and therefore artifice should be resorted to for the purpose of extorting money from him at all events.

Now the artifices to be used for getting money from her lover are as follows:

1st. Taking money from him on different occasions, for the purpose of purchasing various articles, such as ornaments, food, drink, flowers, perfumes and cloths, and either not buying them, or getting from him more than their cost.

2nd. Praising his intelligence to his face.

3rd. Pretending to be obliged to make gifts on occasion of festivals connected with vows, trees, gardens, temples, or tanks.[75]

4th. Pretending that at the time of going to his house, her jewels have been stolen either by the King's guards, or by robbers.

5th. Alleging that her property has been destroyed by fire, by the falling of her house, or by the carelessness of her servants.

6th. Pretending to have lost the ornaments of her lover along with her own.

7th. Causing him to hear through other people of the expenses incurred by her in coming to see him.

8th. Contracting debts for the sake of her lover.

9th. Disputing with her mother on account of some expense incurred by her for her lover, and which was not approved of by her mother.

10th. Not going to parties and festivities in the houses of her friends for the want of presents to make to them, she having previously informed her lover of the valuable presents given to her by these very friends.

11th. Not performing certain festive rites under the pretence that she has no money to perform them with.

- 12th. Engaging artists to do something for her lover.
- 13th. Entertaining physicians and ministers for the purpose of attaining some object.
- 14th. Assisting friends and benefactors both on festive occasions, and in misfortune.
- 15th. Performing household rites.
- 16th. Having to pay the expenses of the ceremony of marriage of the son of a female friend.
- 17th. Having to satisfy curious wishes during her state of pregnancy.
- 18th. Pretending to be ill, and charging her cost of treatment.
- 19th. Having to remove the troubles of a friend.
- 20th. Selling some of her ornaments, so as to give her lover a present.
- 21st. Pretending to sell some of her ornaments, furniture, or cooking utensils to a trader, who has been already tutored how to behave in the matter.
- 22nd. Having to buy cooking utensils of greater value than those of other people, so that they might be more easily distinguished, and not changed for others of an inferior description.
- 23rd. Remembering the former ~~favours~~ of her lover, and causing them always to be spoken of by her friends and followers.
- 24th. Informing her lover of the great gains of other courtezans.
- 25th. Describing before them, and in the presence of her lover, her own great gains, and making them out to be greater even than theirs, though such may not have been really the case.
- 26th. Openly opposing her mother when she ~~endeavours~~ to persuade her to take up with men with whom she has been formerly acquainted, on account of the great gains to be got from them.
- 27th. Lastly, pointing out to her lover the liberality of his rivals.

It sometimes happens that while gains are being sought for, or expected to be realised, that losses only are the result of our efforts, the causes of these losses are:

Weakness of intellect.

Excessive love.

Excessive pride.

Excessive self conceit.

Excessive simplicity.

Excessive confidence.

Excessive anger.

Carelessness.

Recklessness.

Influence of evil genius.

Accidental circumstances.

The results of these losses are:

Expense incurred without any result.

Destruction of future good fortune.

Stoppage of gains about to be realized.

Loss of what is already obtained.

Acquisition of a sour temper.

Becoming ~~unaimiable~~ to every body.

Injury to health.

Loss of hair and other accidents.