

Effect of (rational) “Prayer” on Fetus & Mother : A Quantitative Approach

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Abstract: The purpose of this study was to assess the effect of “good, rational thoughts” (called “prayer”) on the fetus and the mother during the 3rd trimester of pregnancy. The good thoughts (prayer) are radiated, in the form of recording, from Swami Vijnananand, a person who was a selfless, benevolent, philosopher, thinker, who devoted his entire life for social good and totally isolated from the families undergoing the experiment. In all, 1850 cases were critically analyzed, in this study. It was hypothesized that, radiating prayer by Swami Vijnananand to the fetus and mother would be effective, as it has consciousness. The heart rate of fetus and pulse-rates of the pregnant mother were recorded in all 1850 cases, before and after the prayer was recited. The heart rate is a sensitive indicator of an individual’s emotional status and needs. The authors conclude that radiation of such prayer does have a positive impact on the heart rate of the fetus and the pulse-rate of mother. A pattern of stabilization is observed for both the fetus and the mother. In cases where the initial pulse-rate before prayer was far below normal it tended to increase after prayer. On the other hand, where the initial pulse- rate before prayer was high, it came down in the normal range after prayer. And for those cases where the initial pulse rate was in the normal range it remained unaffected after prayer.

Keywords: Effects of Prayer, Linear Regression, Exploratory Data Analysis, Histogram

The latest scientific research supports the belief that “prayer” has a tremendous potential to change one’s personality.

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Typically, healing is faster with prayer, even if the patient may not be aware of it. Larry Dossey, M.D., reports that an organization called The Spindthrift Foundation has been created to scientifically explore the relative effectiveness of "prayer." In his book, *Recovering the Soul: A Scientific and Spiritual Search*, Dr. Dossey (1989) describes many experiments which indicate that prayer is an extremely potent intervention. The first study reported was conducted by cardiologist Randolph Byrd, of San Francisco General Hospital. In a study of 393 cardiac patients, over a period of ten months, Byrd found statistically significant differences on three variables, for the prayed-for group. Recent reviews of the research literature provide a convincing case that "on average, high levels of religious involvement are moderately associated with better health status," (Chatters, Levin, & Ellison)

The book *The Intention Experiment* by Lynne McTaggart (2007) explains science of Intention and lists number of experiments proving effect of thoughts not only on living being but on matter also. Some of them are as follows.

- Human intention can influence electronic devices (e.g. REG: Random Event Generator) in the specified direction.
- Robot and chick Experiment: Researchers tested the possible influence of 80 groups of 15 chicks on a random moving robot carrying a lighted candle in an otherwise darkened room. Baby chicks prefer to be in the presence of light; could this preference somehow influence the movement of the candle carrying robot? In 71% cases, the robot spent excessive time in the vicinity of chicks. In the absence of the chicks, the robots followed random path. The overall results were statistically significant.
- Human intention can affect an enormous variety of living systems: Bacteria, yeast, algae, lice, chicks, mice, gerbils, rats, cats, and dogs.
- Human thoughts can affect the direction in which fish swims.
- Thoughts can affect movement of animals e.g. Gerbils
- Thoughts can affect the autonomic nervous system of another person.
- People are subconsciously aroused when they were being stared at. (GSR levels are changed)

Elisabeth Targ and colleagues (Sicher, Targ, Moore, & Smith, 1998) reported on research with AIDS patients. A homogenous group of AIDS patients in advanced stage was selected. Homogenous means same degree of illness to all patients and

same T cell count. They recruited highly experienced healers from all over from the world. The study was carried out by double blind method. Every healer would send healing thoughts (for the wellbeing of the patients) for an hour every day for six days. At the end of first study, 40% of the patients in the control group died, while all 10 patients in the treatment group were alive and healthier in every regard.

Based on this background it seemed likely that the prayer would affect the fetus & mother. The question then became; how to verify this? To answer this question, we needed to understand the form of existence of fetus before conception, the concept of rational prayer, and a quantitative method to measure the effect of the prayer. In what follows, we describe all these aspects.

Fetus: An Organizing Mind

At conception, the sperm and the ovum unite, to form a new individual.

Regarding the nature of the sperm, the following information is worth being noted. Dr. Richard M. Restak, M.D. (1992) in his famous book, *The Mind*, says that, "Sperm are single-celled organisms capable not only of movement, but of reaction to their environment. They have all the appearance of "behaviour" at the cellular level... A variety of hormones, neurotransmitters, peptides, even mother's behaviour and mood, have all been shown to influence fertilization. Thus, even at the cellular level, "selection" and "choice" are taking place, whereby certain sperm with certain characteristics will be favored over others... Thus, it is certain that genes, behaviour, and environment influence organisms ranging from the sperm and the ovum to the whole person functioning in a complex world." (p.35)

The above description leads to one fundamental question, who "favors" & "selects" these lucky sperm?

To get an answer to this question, we have to understand the concept and role of "Organizing mind" as proposed by Swami Vijnananand (1980). His book, *Mind Power* describes this concept in detail. In crux, every cell in the body has mind of its own, called "cell mind" & the collective mind of all cells of the body is called "Organizing mind."

At conception, life starts with union of a sperm and ovum to form a zygote. The meaning of "Life" is "activity" or "movement." The "Life," i.e. "activity" or "movement" is essentially a property of "Non-Matter" or "Energy" or "Prana"(in Sanskrit), since "Matter"

cannot be moved by itself as it has “Inertia.” The law of inertia in Physics (Newton’s law of motion) states that “the matter will continue to be in the same state of rest or in motion unless an external force is applied.” This indicates that to get a “Movement” or “Life” in “matter” an “Energy” is essential. In this context, the whole process of conception can be viewed from a different angle. Conception is union of “Matter” (in the form of sperm and ovum) and “Energy,” (the mind of the baby to be born). This energy or the mind of baby to be born is called as “Organizing mind.” The organizing mind is the leader of the whole birthing process, right from conception and organizes and co-ordinates minds of individual cells that are formed to construct the body of the fetus.

At the fetal level, the prayer is for its organizing mind. It should be noted that prayer provides an early opportunity to establish communication with the fetus. Prayer, as good rational thought, can be the first opportunity for communication.

A Rational Prayer for the Fetus

As defined by Swami Vijnananand, a prayer is a process of purposefully transmitting selfless, good thoughts; which, in this case, are directed towards the fetus, for its well-being. It is worthwhile to note that, even before a thought is expressed verbally, it remains in an unexpressed, potent form, in the mind of the person who prays. At this potent level, its wavelength is the shortest and hence its energy is maximum. Therefore, “prayer” can be non-verbal also, just transmitting thoughts from mind. Since we were studying pregnant couples in 3rd trimester, we have used verbal prayer method, so that fetus also can hear the prayer.

As we are interested in measuring the effect of prayer on the fetus by scientific method, we use “heart beats of the fetus” as a quantitative measure, which are easier to detect by the end of the sixth month. The aim of this study is, to quantify the effect of such intentional, selfless and spoken prayer on the fetus and parents, especially the mother.

Normally the word “prayer” would suggest association with some religious or spiritual rituals. But that is not intended in this experiment. Hence the word “rational prayer” is used instead of just “prayer.” As quoted by Dr Larry Dossey (1989), “Researchers in this field often prefer to use the term ‘distant intentionality’ instead of prayer, in order to avoid religious connection and to emphasize the purposeful, mental aspect of prayer.” A textbook

definition of intention is “a purposeful plan to perform an action, which will lead to desired outcome.”

Contents of the prayer. The fetus is addressed and it is solemnly stated that

- (A) She/He is a need of the family and all the family members lovingly welcome the baby in this world,
- (B) She/He has complete freedom of thinking and action, and
- (C) She/He is free to select a correct path of her/his choice, so that the baby can lead a life of “Courage” (Dhairya) and “Peace” (Shanti).

The sum and substance of the prayer, as recited by Swamiji, is as follows:

“Welcome, O life-energy, entering in this world! I do not want to interfere with whatever decisions you have made or whatever you have planned. This welcome intends to wish you success in your decisions. Let the “good” prosper and “evil” be reduced. Let the family and the society be of help in your good actions. Let the world also profit by your actions. Let your parents be blessed by your actions and be proud of you. Welcome dear soul! Let your good actions flourish. There is so much good around here. We all must try together to reduce the evil. We ask for your co-operation. The world is complex. It contains both, good and evil, joy and sorrow, though nothing can be denied. Everything that comes our way, has to be accepted and one has to proceed further according to one’s capacities and capabilities. Welcome again dear soul! You will come and be an honor to this world. With these expectations, I welcome you! Give whatever you owe to (your) parents and society, and also accept whatever is due to you. This world is extremely happy to receive you and is eagerly waiting for you.”

An important point to be noted here is that, the experimenter (Swami Vijnananand, in this case) who says the prayer, must not have any selfish motive, while praying. Basically, she/he must be interested only in the well-being of the future generation and society at large.

The above prayer radiated by Swami Vijnananand, is recorded on an audio-cassette. In our study, Mrs. Kelkar (Mrs.K) was the second experimenter, who played the audio-tape of Swami Vijnananand, to the fetus and the parents. Further, Mrs.K measured and kept the records of the heart beats of fetus, and pulse-rates of the mother and father. Thus, the two experimenters were constant in all cases.

Scope of the study

The sole purpose of this paper is to study the effectiveness of “rational prayer “ on the pulse rate of mother and fetus. By applying the statistical technique, regression analysis, to 1850 cases it is indicated to be effective. Further, this can be validated by applying the findings to additional data.

Method

The above-referred process of “prayer” is known as “Garbha-Sanskar” in Sanskrit. (In the rest of the article, we will refer to it as “GS”). GS is a process of imparting good values to the fetus.

For peaceful surroundings and a serene atmosphere, GS is done in the Ashram’s research centre at Lonavla - a hill station near to Mumbai, located in the mountain range of Sanhyadri.

Parents are advised to undergo GS, in the last trimester of pregnancy.

After arriving in the Research center of the ashram, as the first part of the GS process, the parents are given literature regarding GS to study. This requires about an hour & a half. It helps to stabilize their mind and body also, get full convinced of the process of GS, and ultimately puts them in a receptive frame of mind.

Now during the actual experiment, the mother is asked to lie down in a dorsal position, and the father is asked to sit in a chair near the mother.

Equipment

The equipment used for the experiment are: Cassette/CD player, two digital pulse monitors, and an ultra-sound fetal monitor (color doppler). The light-sensitive probes of the pulse-monitors, are attached to the fingers of parents, while the ultrasonic probe is placed on the tummy of the mother.

Procedure

The pregnant couple is asked to close their eyes and relax. Mrs.K gives them verbal instructions, leading to peace and relaxation in them. In this relaxed, normal state of mind, the pulse-rates of **M**other, **F**ather and heart-beats of **F**etus (MFF) are noted. These are the initial pulse-rates before prayer. Thereafter, Mrs.K asks the parents to listen to the recorded prayer of Swami Vijnananand, with concentration. She plays the tape, containing the thoughts mentioned in the contents of the prayer above. The prayer ends with the chanting of “Gayatri Mantra.”

The Gayatri Mantra is in Sanskrit, and pronounced as follows. “Tat savitur varenyam bhargo devasya dheemahi, dhiyo yo nah prachodayat”

तत् सवितुर्वरेण्यम् भर्गो देवस्य धीमहि
धियो यो नः प्रचोदयात्।

Meaning “Oh Goddess Savita [World Protecting Power]! The Sun receives enlightening energy from you. That brilliant Sun scorches and fires throughout; and unreservedly bestows the energy so acquired, upon the whole world. Let the same sense of benevolence arise in me.” Or, in brief, one can say, “Let the highest energy of “good,” inspire my desires; enlighten my future.”

During the prayer, Mrs.K and her colleague observe the pulse-rates of MFF (**M**other, **F**ather and **F**etus), and actually record the pulse rates after the prayer. This is termed as, pulse-rate after prayer.

Thereafter, the parents are asked to meditate on “light-energy” (in the form of a candle flame) for about five minutes, whereupon the experiment concludes. The parents give feedback about the GS process, by narrating their experience in writing.

Although the GS is a 40 year old programme for the ashram, it has been supported as a measuring instrument since 1983. Swami Vijnananand took “Samadhi,” i.e. willfully departing from body, for the highest purpose) in 1993. Since then, Mrs.K is the experimenter. As of today, about 1000 pregnant couples participate in GS every year, and the number is increasing every year.

Data Analysis and Model Fitting

This study is based on 1850 records, collected from Jan.1997 to Sept. 2002. A typical record contains date of experiment, name and age of mother, name and age of father, pulse-rate of mother-father and heart-beats of fetus, before and after the prayer.

Table 1: Age Distribution of Mothers

	No. of Cases	Mother's age-mage	No. of Cases	Mother's age-mage	No. of Cases	Mother's age-mage	No. of Cases
17	5	23	136	29	113	35	20
18	8	24	170	30	116	36	8
19	46	25	226	31	43	37	11
20	62	26	216	32	71	38	8
21	91	27	188	33	33	39	3
22	91	28	144	34	40		

From table 1, minimum age of pregnant mother is 17 and maximum age is 39. The mean of “m_age” is 26.23 and, out of 1850 cases, 1221 are of the age less than the mean age. Thus about 66 % of women in the study are pregnant before mean age i.e. age distribution of mother is not normal. As seen from fig 1, it is negatively skewed, having long tail towards right.

Figure 1

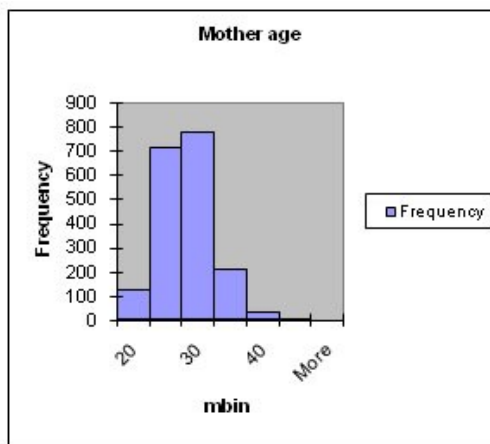
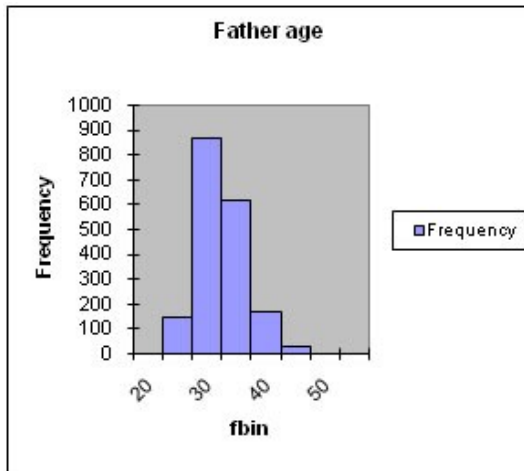


Table 2: Age Distribution of Fathers

Father's age - fage	No. of Cases	Father's age - fage	No. of Cases	Father's age - fage	No. of Cases
22	10	30	261	38	31
23	16	31	140	39	19
24	47	32	172	40	27
25	72	33	111	41	14
26	123	34	95	42	8
27	130	35	98	43	5
28	172	36	51	44	3
29	179	37	41	46	2

From table 2, minimum age of father, i.e. “f_age” is 22, and maximum is 46. The mean of “f_age” is 30.6 and, out of 1850 cases, 1152 are of age less than the mean age. Thus about 62% fathers in the study are having age less than the mean age. i.e. age distribution of father is also not normal. As seen from fig 2, it is negatively skewed, having long tail towards right.

Figure 2



5.1.c The test for normality of data for fathers age & mothers age.

Table 3: One-sample Kolmogorov - Smirnov (K-S) Test

	K-S Test statistics	P-value
Mother’s age	0.0901	0
Father’s age	0.1126	0

The above fact of non normality of age distribution is reflected in the analysis of data also. For testing the hypothesis of “Normality of data,” the p value was calculated & is found zero for both the data. Thus the hypothesis for “normal distribution” is rejected. i.e. data on mothers age as well as fathers age do not come from normal distribution.

Further, we examined the dependency of father’s age on mother’s age, using linear regression. The linear regression equation is-

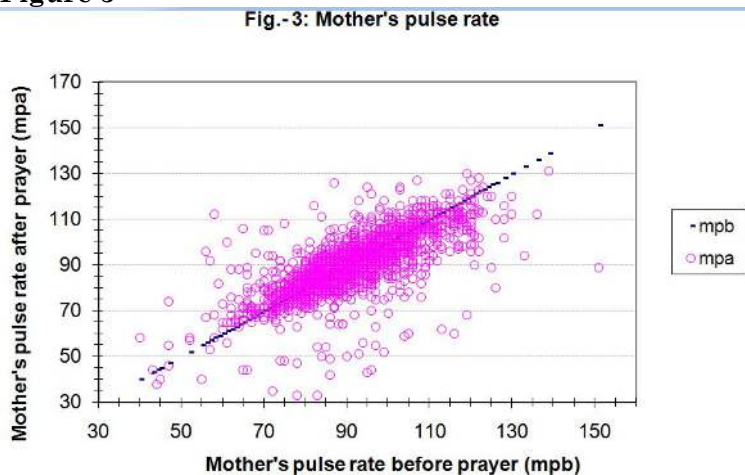
$$\text{Father's age} = 10.2342 + 0.7771 (\text{Mother's age})$$

with both intercept and slope are statistically significant, at 99% confidence level.

The relationship between pulse rate before and after the prayer in case of mother:

The scatter plots of relationship between pulse rate before and after the prayer for mother is as below – (Fig.3)

Figure 3



During pregnancy, the pulse rate of mother between 80 beats per minute (bpm) and 110 (bpm) is considered as normal. Anything below 80 (bpm) and above 110 (bpm) are considered low and high pulse rates respectively.

As shown in fig 3, average mothers pulse rate after prayer i.e. “mpa,” depends upon mothers pulse rate before prayer i.e. “mpb.” Further an eye ball inspection of fig 3 reveals that when the pulse rate of the mother, before prayer (mpb) is less than 80 bpm, the prayer increases the pulse rate, pushing it to the normal range which is indicated by “mpa.” On the other hand when the pulse rate of the mother before prayer (mpb) is greater than 110 bpm, the prayer decreases the pulse towards normal range which is indicated by “mpa.” Interestingly, when the pulse rate of the mother before prayer is in the normal range, i.e. between 80 - 110 bpm, it remains unaffected after the prayer also. This is so because no correction is required for readings in the normal range.

To decide the lower and upper zones of the pulse-rate based on “before the prayer,” we wrote a program of piece-wise linear regression (Montgomery & Peck, 2001) in S plus, and obtained three zones as shown below. Unless specified, all the parameters included in the regression equation are significant at 99% of confidence level. Outcomes are as below:

Zone 1: **Low** pulse rate zone. In this zone, pulse rates before prayer for the pregnant women are in the range of 40 to 83 bpm.

Zone 2: **Normal** pulse rate zone. In this zone, pulse rates before prayer for pregnant women are in the range of 84 to 106 bpm.

Zone 3: **High** pulse rate zone. In this zone, pulse rates before prayer for pregnant women are in the range of 107 to 139 bpm.

Zone wise equations for predicting pulse rates as a result of prayer

For each zone, regression equation for predicting mothers pulse rate after prayer i.e. mpa is obtained with relation to mothers pulse rate before prayer.

Zone-1: Pulse rate of the mother before the prayer in the range of 40 to 83 bpm.

The regression equation in this zone is -

**Predicted Mother's pulse rate after the prayer = 26.85
+ 0.68 * Mother's pulse rate before the prayer**

It may be noted that, in this zone, when the mother's pulse-rate before the prayer is 40, the predicted mother's pulse-rate after the prayer would be 54; while, when the pulse-rate before the prayer is 83, the predicted mother's pulse-rate after the prayer is 84. That is, as the effect of the prayer, the expected pulse rate after the prayer is going to increase towards the expected **normal pulse rate** of the pregnant mother.

Zone-2: Pulse rate before the prayer in the range of 84 to 106 bpm.

Predicted Mother's pulse rate after the prayer = 24.26 - 0.76 * month of pregnancy + 0.79 * Mother's pulse rate before the prayer

We note that, in this zone, the month of pregnancy has turned out to be significant at 95% level of confidence. Further, the predicted values of pulse-rates after the prayer, range between 84 to 103 bpm.

Zone-3: Pulse rate before the prayer in the range of 107 to 139 bpm.

The regression equation in this zone is –

Predicted Mother's pulse rate after the prayer = 81.02 - 1.53 * month of pregnancy + 0.36 * Mother's pulse rate before the prayer

In this case, the month of pregnancy is significant at only 75% level of confidence. However, we have included it because of the large coefficient of regression. The predicted pulse rate after the prayer range between 105 to 118 bpm.

To summarize, in Zone -1, where the pulse-rate of the mother is less than the average pulse-rate, the prayer helps the mother to increase the pulse-rate towards the normal pulse- rate. While in Zone-3, where the pulse-rate before the prayer is higher than normal pulse- rate, the prayer helps to decrease it towards the

normal pulse-rate. Also, it may be noted that, when the pulse rate before the prayer is around the normal, the pulse-rate after the prayer also remains around the normal range.

Hence we conclude that, the prayer helps the mothers in restoring the pulse-rate around the normal value, there by maintaining steady state of health.

Exploratory data analysis of data on fetus:

From the data collected for the pulse rates of the fetuses, the average pulse-rates before prayer is 143.22 bpm.

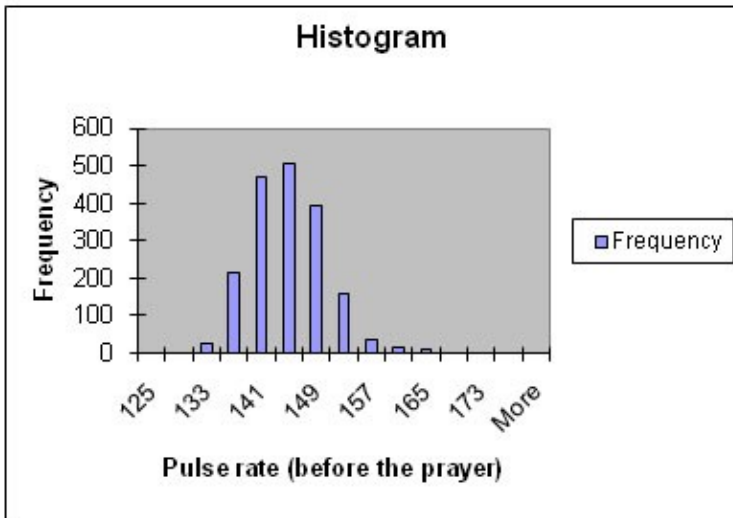
Similarly, the average pulse-rates of the fetuses after the prayer is 144.95.

Frequency and histogram of the pulse-rate before the prayer, is as shown below-

Table 4 (Pulse rate of the fetus before prayer)

Pulse rate (before)	125	129	133	137	141	145	149	153	157	161	165	169	173	177
Frequency	1	2	28	215	474	507	394	161	36	15	9	3	1	0

Figure 4

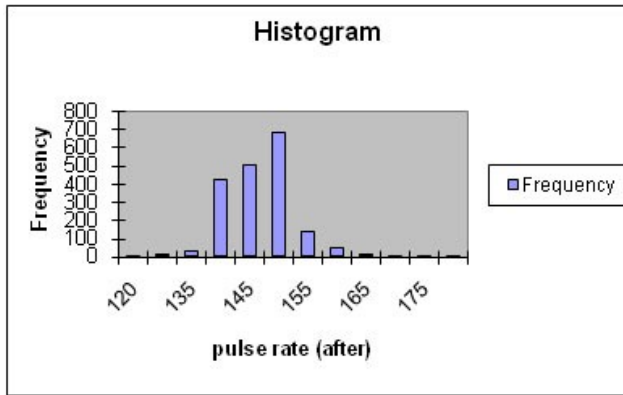


Frequency and histogram of the pulse-rate after the prayer, is as shown below-

Table 5 (Pulse rate of the fetus after prayer)

Pulse rate (after)	120	130	135	140	145	150	155	160	165	170	175	more
Frequency	3	11	30	426	501	680	137	44	6	4	1	3

Figure 5



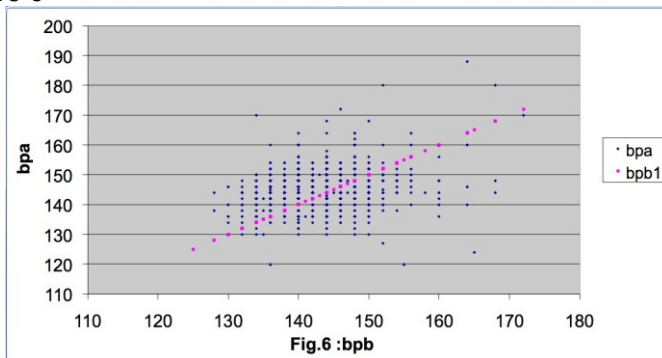
As shown below in the Figure 6, the scatter plot of pulse-rate of the fetus before and after the prayer clearly indicates that there are zones wherein the prayer has a different effect on the pulse, after the prayer.

Zone - 1: For pulse rate of the fetus before prayer < 138, value increases towards normal after the prayer.

Zone - 2: For pulse rate of the fetus before prayer >150, value decreases towards normal after the prayer.

Zone - 3: For pulse rate of the fetus before prayer in the normal range, value remains normal after the prayer.

Figure 6



bpb = pulse rate of the fetus before prayer
 bpa = pulse rate of the fetus after prayer

The averages before and after the prayer in these three zones are as shown below.

Table 5 Zone wise average pulse rates of the fetus

Zone (pulse rate before the prayer)	Average pulse rate before the prayer	Average pulse rate after the prayer
Less than or equal to 138	135.67	142.95
Between 140 and 148	143.5	145.1
Greater than or equal to 150	152.65	144.95

It is clear that, as a consequence of the prayer, the pulse-rate of the fetus moves towards the average normal pulse-rate after the prayer.

Hence, we again carried out a piece-wise multiple linear regressions to determine the optimal three zones, using piece-wise linear regression and fitted the regression lines using age of the mother, mother’s pulse rate before and after the prayer, and the pulse rate of the fetus before the prayer as regressors for each of these three zones separately. Fitted regression lines are given below. Unless mentioned specifically all the regression coefficients reported below are significant at 99% of confidence.

To decide the different zones of fetus pulse rates before the prayer, we wrote a program in S plus obtained 3 zones below.

Zone-1: Fetus pulse rate before prayer less than or equal to 138.

The regression equation is: Predicted fetus pulse rate after the prayer = 50.5 + 0.7*fetus pulse rate before the prayer -0.06 * pulse rate after the prayer of the mother

Zone-2: Fetus pulse rate before prayer between 140 & 148.

The regression equation is: Predicted fetus pulse rate after the prayer = 107.07 + 0.24*fetus pulse rate before the prayer +0.043 * pulse rate after the prayer of the mother

Zone-3: Fetus pulse rate before prayer greater than or equal to 150.

The regression equation is: Predicted fetus pulse rate after the prayer = 54.79 + 0.5*fetus pulse rate before the prayer +0.05 * pulse rate after the prayer of the mother

Similarly to the case of mother, the prayer is effective for the fetus too. This is because irrespective of the value of the pulse rate before the prayer, the pulse rate was shown to fall in the normal range after the prayer.

Further research

A comparative study can be undertaken in which along with the rational prayer other external factors such as music, etc. may be considered. The use of a control group might also be considered. By doing so it would be possible to determine the best method for making the pulse rate normal.

Conclusions

The statistical analysis reveals that, for mothers and the fetuses having extremely low pulse-rate during pregnancy, the rate is raised to nearing normal; and extra high pulse-rate of the mothers and fetuses, is reduced to normal average pulse-rate, after the prayer. It is also interesting to note that the pulse rates in normal range remains unaffected! Thus it can be concluded that, the pulse-rate gets adjusted as an effect of the prayer. This means that, re-adjustment and balancing of the energy takes place, both, in the mother and the fetus, giving comfort to both of them.

The statistical analysis leads to mathematical equations predicting pulse rates for both mother & fetus after the prayer. This also emphasizes the fact that rational prayer plays an important role in stabilizing body & mind of the mother & fetus.

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