CHAPTER VII

Bibliography
7.1 Introduction:

The present study examined the role and performance of SSO in providing health care services to insured people, the study also examined the feasibility of infrastructure facilities for nanotechnology and nanomedicine in health care system of Iran. The present chapter has three sections; the section A presents major findings of the study, section B deals with testing of hypothesis, and the section C provides the policy imperatives.

Section A

7.2. Major Findings of the Study:

This section presents major findings of the study;

- Chapter three introduces social security organization and it also presents performance of SSO in Iran.

- Social security has confirmed its situation in rich and poor countries. Social security as a pioneer to remove discrimination from society has been successful to provide social services for all categories of people. Nowadays, development in countries is examined by quantity of services and also quality of services, offered by social security. Considering expectations of people, all economic, political and social systems try to develop and standardize social security services. Hence, SSO in Iran is an inevitable necessity and as a priority has to be considered.

- It has been also found that social security organization in Iran is the most important foundation to provide relevant services. While many other organizations and insurance companies offer similar services, SSO covers 30,000,000 insured. Although the government is in charge of a portion of resources financially to support insured individuals it is not responsibility of government to provide direct financial resources.

- The SSO offers a variety of services to the insured and their family members. Long term and short term commitments are offered as different forms of services by social security organization. Medical and insurance sections are responsible to fulfill these commitments.
Social security organization after health ministry is the second health services supplier in the country. SSO is responsible to cover insuring process for workers, pensioners, employees and their families. Also to provide essential health services, SSO issues insurance booklets for insured individuals and their families. SSO offers health services in two ways: delivering services through the direct health section and delivering services through the indirect health section.

In the direct health section, by medical booklets issued for insured individuals and their families, SSO offers medical services and facilities freely to them in relevant hospitals and centers of medical health.

In the indirect health section, health services are bought by social security organization to offer more (services, facilities and security). Providing services through private sector under contract is a way that SSO enables the insured to enjoy services of medical centers, hospitals, doctors, specialists and medical staff that are independently under contract with SSO. Only the franchise of medical payment is collected by private centers of health care under contract with social security organization but private sectors of health care which are not under contract with SSO collect total medical fee. Also submitting of necessary proof to offices related to medical documentation is compulsory. Based on definitions of SSO, a part of medical costs is repaid to insured one.

It has been found from the study that insurance services offered by SSO via 469 branches and relevant departments in 31 provinces in Iran, cover insured individuals, pensioners and their families.

It has been found from the study, recently, 28538 physicians and dentists, 68 hospitals and 842 polyclinics and clinics are under contract with social security organization.

It has been found from the study, presently almost 8,000,000 main insured and 1,500,000 retired are covered by social security organization. To expand justice in society, to help people in case of natural incidents and economic crisis in family.

The study also discusses about health and health care and it also explains importance of health care services in life.
Health as a priority has important role in individual’s life. Happy life is the result of good health. By unhealthy body and mind, joyful and useful life is impossible. Nowadays under unhealthy condition of body and mind for example pollution, improper diet, lack of enough physical activities, living in giant metropolitans, people are not able to tune with life normally.

It has been found from the study; health is defined and applied in three types. The absence of illness or any disorder is the first definition of the health. As the second type of definition, health is individual’s state of sufficiently overcome all needs of daily life. Stable state of emotion and mind to connect an individual with himself and others also environments physically is third definition of health.

Commonly in society health means physical health but it is consist of physical and mental aspects both.

It has been found from the study that care services are offered in four levels (Primary care, Secondary care, Tertiary care and Quaternary care).

It has been found from the study that to have an organization with responsible employees, development and improvement of employees health by employers is necessary. By this way not only the cost of health care will be decreased also the company benefits from less absence of employees. Spending on health of employees results in returning money positively and leading company to reach higher level of economic growth.

It has been found from the study that in any community with different and changing policy, health related considerations are a priority. Simultaneously governments are responsible for health growth and developing affairs related to economics based on marketing of health with consideration of society benefits. Providing new system of health and adapting them with possible replacements in area of society, economics, politics and culture is challenge of regimes.

It has been found from the study the governments’ task is crucial to indicate health as a priority but promoting of health in society also investing in this sector are obligatory activities that have to be done by governments. Creating
a harmony between health sector and other organizations to fulfill purposes of
governments regarding health is necessary.

7.2.1 Findings Based on the Secondary Data:

The first section of the chapter five allocated to analysis data with AGR
(average growth rate) and AAGR (The average annual growth rate).

- It has been found from the secondary data analysis that, SSO has been failed
to increase the number of hospitals, clinic and Day-clinic (under direct control
of SSO) in accordance with increased the number of insured persons by SSO.

- The SSO has been succeeded to increase the number of outpatients treated by
visiting physicians (under direct control of SSO) in accordance with increased
the number of insured persons by SSO.

- The SSO has been failed to increase the number of outpatients treated by
visiting specialists and dentists (under direct control of SSO) in accordance
with increased the number of insured persons by SSO.

- It has been found that SSO sending more people to para-clinic centers (under
direct control of SSO).

- The SSO has been failed to increase the number of outpatients' treated by
visiting physicians (under contract of SSO) in accordance with increased the
number of insured persons.

- The SSO has been succeeded to increase the number of outpatients' treated by
visiting specialists and dentists (under contract of SSO) in accordance with
increased the number of insured persons.

- The SSO has been failed to increase the number of outpatients treated by
visiting physicians (under direct control of SSO and under contract of SSO) in
accordance with increased the number of insured persons by SSO.

- The SSO has been succeeded to increase the number of the outpatients' treated
by visiting specialists and dentists (under direct control of SSO and under
contract of SSO) in accordance with increased the number of insured persons
by SSO.
The SSO has been succeeded to increase the number of physicians, specialists, anesthesiologists and pharmacologists (under direct control of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been failed to increase the number of dentists (under direct control of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of pharmaceutical, technicians, operating room technicians, anesthesia team, nursery personnel, medical record technicians, of physiotherapy personnel, laboratory personnel and radiology personnel (under direct control of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been failed to increase the number of midwifery personnel and nutritionists (under direct control of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been failed to increase the number of active beds (under direct control of SSO) in accordance with increased the number of insured persons by SSO.

It has been found that there is increasing demand for minor and moderate surgery (under direct control of SSO). Accordingly, SSO has to increase the facilities for minor and moderate surgeries.

It has been found there is decreasing demand for major surgery (under direct control of SSO).

The SSO has been failed to increase the number of hospitals (under direct control of SSO) in accordance with increased the number of inpatients by SSO.

The SSO has been failed to increase the number of hospitals (under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of clinics and day clinics (under contract of SSO) in accordance with increased the number of insured persons by SSO.
The SSO has been failed to increase the number of other health care (under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been failed to increase the number of physicians (under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of specialists, dentists and pharmacies (under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of centers such as: physiotherapy, kidney stone remover, dialyzes, scan, M.R.I, radiology s, laboratory and others centers (under contract of SSO) in accordance with increased the number of insured persons by SSO.

SSO has been failed to increase the number of sum hospitals (under direct control of SSO & under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of sum of clinics and day clinics (under direct control of SSO & under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been failed to increase the number of sum of physicians (under direct control of SSO & under contract of SSO) in accordance with increased the number of insured persons by SSO.

The SSO has been succeeded to increase the number of sum of specialists and the number of sum of dentists (under direct control of SSO & under contract of SSO) in accordance with increased the number of insured persons by SSO.

It has been found that, SSO expenditure on hired services for outpatients has been significantly increased.

It has been found that, SSO expenditure on hired services for inpatients has been increased.

It has been found that due to lack of human and physical infrastructure, inevitably SSO has been depending on private hired services relatively spending more on hired services.
The SSO has its own hospitals and medical staff to provide the health care facilities; to maintain these SSO makes expenditure, which is known as direct health cost. As also, SSO uses hospitals and medical staff private agencies to provide the health care facilities; to pay for these, SSO makes expenditure, which is known as indirect health cost. Together, direct and indirect cost it is known as total cost of SSO. All these cost have been increased continuously over the period of time.

It has been found that the cost of health sector to the number of insured persons has been increased. As a matter of fact the cost per insured has been significantly increased over the period of time.

There were more numbers of hospitals under contract serving for SSO patients compared to the hospitals belong to SSO. Hence, dependency of SSO on under contract hospitals is significantly high.

There were more number of clinics under contract serving for SSO patients compared to the clinics belong to SSO. Hence, dependency of SSO on under contract clinics is significantly high.

There were more numbers of Day clinics under contract serving for SSO patients compared to the Day clinics belong to SSO. Hence, dependency of SSO on under contract Day clinics is significantly high.

It has been found that SSO equally depending upon the physicians of both under direct control of SSO and under contract of SSO.

There were more number of outpatients treated by visiting specialists under contract of SSO compared to the outpatients treated by visiting specialists belong to SSO. Hence, dependency of SSO on contract visiting specialists is significantly high.

There were more numbers of outpatients treated by visiting dentists serving for SSO compared to the outpatients treated by visiting dentists under contract of SSO. Hence, dependency of SSO on contract visiting dentists is relatively less.
There were more numbers of contract physicians serving for SSO patients compared to the physicians belong to SSO. Hence, dependency of SSO on contract physicians is significantly high.

There were more numbers of contract specialists serving for SSO patients compared to the specialists belong to SSO. Hence, dependency of SSO on contract specialists is significantly high.

There were more contract dentists serving for SSO patients compared to the dentists belong to SSO. Hence, dependency of SSO on contract dentists is significantly high.

It has been found that the SSO equally spending on direct health services as well as indirect health services.

7.2.2 Finding Based on the Primary Data:

It has been found from primary data, the public insurance is more necessary for patient compared to medical staff and doctors. Those having higher level of education also had more positive responses about necessity of public insurance. Accordingly, ninety eight percent of respondents felt that public insurance is necessary for health security of people. Therefore, public health insurance is important for majority of the respondents, irrespective of org, age and gender.

It has been found, ninety eight percent of respondents opined that health insurance is necessary for health security of people. Therefore, health insurance is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

In compared to the respondents from under SSO contract more numbers of respondents from SSO have opined that disability insurance is necessary for individuals. Hence disability insurance is more necessary for SSO respondents compared to under SSO contract respondents. Accordingly, ninety eight percent of respondents expressed that disability insurance is necessary for health security of people. Therefore, disability insurance is important for majority of the respondents, irrespective of type of respondents, age, gender and length of education.
Ninety eight percent of respondents expressed that retirement insurance is necessary for individuals. Therefore, retirement insurance is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

Ninety eight percent of respondents opined that life insurance is necessary for people. Hence, life insurance is significant for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

It has been found, ninety seven percent of respondents expressed that unemployment insurance is necessary for people. Hence, life insurance is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

Ninety five percent of respondents expressed that Supplemental insurance is necessary for individuals. Thus, Supplemental insurance is significant for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

Ninety six percent of respondents expressed that accidental death and dismemberment insurance is necessary for people. Hence, accidental death and dismemberment insurance is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

It has been found that nineteen percent of respondents opined that cost of treatment is completely paid by insurance company. Therefore, majority of respondents expressed that only part of treatment cost is paid by insurance company; irrespective of organization, type of respondents, age, gender and length of education.

The result illustrated that ninety five percent of respondents felt that development of health services is necessary for health security of people. Therefore, development of health services is significant for majority of the respondent; irrespective of organization, type of respondents, age, gender and length of education.
The results shown that ninety one percent of respondents opined that updating of health services is necessary for health security of people. Thus, updating of health services is important for majority of the respondent; irrespective of organization, type of respondents, age, gender and length of education.

The result indicated that compared to the respondents from under SSO contract, more number of respondents from SSO opined the necessity of substitution of new method. Thus substitution of new methods is more important for SSO compared to under SSO contract. Accordingly, eighty percent of respondents felt substitution of new methods is necessary for health security of people. Therefore, substitution of new methods is significant for majority of the respondents, irrespective of type of respondents, age, gender and length of education.

The results revealed that current methods are more effective for male respondents compared to female. According to only thirteen percent of the respondents, the current methods of medicine, is effective. Therefore, majority of the respondents expressed that current methods of medicine is not effective, irrespective of organization, type of respondents, age and length of education.

It has been found that eighty four percent of respondents felt that cost of current method is expensive. Thus, cost of current methods is costly for majority of the respondents, irrespective of org, irrespective of organization, type of respondents, age, gender and length of education.

The results shown that eighty six percent of respondents expressed that new methods are necessary for reducing duration of treatment. Therefore, the new methods to reduction of duration of treatment is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

Ninety four percent of respondents opined that the new methods of treatment are necessary to reduce side effects. Thus, the new methods to reduction of side effects are significant for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

The results indicated that doctors and the respondents with higher education have more awareness about nano compared to medical staff, patients and less
educated. Totally, sixty eight percent of respondents have awareness about nano. Thus, the awareness of people about nano is high, irrespective of organization, age and gender.

- It has been found, doctors, younger respondents have more awareness about nano concept compared to medical staff and patients and older people. Totally only twenty two percent of respondents have awareness about nano concept. Thus the awareness of people about concept of nano is very less, irrespective of organization, gender and length of education.

- Doctors, younger people and the respondents with higher education have more awareness about nanotechnology compared to medical staff and patients, less educated and older people. Totally, sixty seven percent of respondents have awareness about nanotechnology. Thus, the awareness of people about nanotechnology is high and majority of respondents have awareness about nanotechnology, irrespective of organization and gender.

- Thirty one percent of respondents have awareness about application of nanotechnology. Thus the awareness of people about nanotechnology applications is less, irrespective of organization, type of respondents, age, gender and length of education.

- It has been found that nineteen percent of respondents have awareness about products of nanotechnology. Therefore the awareness of people about nanotechnology products is very less, irrespective of organization, type of respondents, age, gender and length of education.

- Six percent of respondents have used of nanotechnology products. Therefore, very few respondents have used of nanotechnology products, irrespective of organization, type of respondents, age, gender and length of education.

- Doctors and the respondents with higher education have more awareness about nanomedicine compared to medical staff, patients and less educated. Totally, forty nine percent of respondents have awareness about nanomedicine. Thus, the awareness of people about nanomedicine is moderate, irrespective of organization, age and gender.

- Doctors and the respondents with higher education have more awareness about application of nanomedicine compared to medical staff, patients and less
educated. Totally, thirty nine percent of respondents have awareness about nanomedicine application. Thus, the awareness of people about application of nanomedicine is relatively low, irrespective of organization, age and gender.

- It has been found that doctors have more awareness about products of nanomedicine in comparison to medical staff and patients. Totally, only twenty two percent of respondents have awareness about nanomedicine products. Therefore, the awareness of people about products of nanomedicine is very less, irrespective of organization, age, gender and length of education.

- The respondents with higher education were more interested in choice of nanomedicine method in comparison to less educated. Totally, only twenty percent of respondents were interested in using nanomedicine methods. Therefore, interest in using nanomedicine methods is very low, irrespective of organization, type of respondents, age and gender.

- Compared to the respondents from SSO, more number of respondents from under SSO contract was interested in substitution of nanomedicine methods instead of current methods and also compared to the medical staff and patients respondents, more number of doctors was interested in substitution of nanomedicine methods instead of current methods in medical. Thus, using nanomedicine methods is more significant for doctors compared to medical staff and patients respondents. Totally, forty six percent of respondents were interested in substitution by nanomedicine methods. Therefore, interest in using nanomedicine methods is moderate, irrespective of age, gender and length of education.

- Compared to the medical staff and patients respondents, more numbers of doctors have opined that nanomedicine methods are effective. Thus, nanomedicine methods are more effective for doctors compared to medical staff and patients respondents. Totally, thirty four percent of the respondents, the nanomedicine methods, is effective. Therefore, majority of the respondents opined that nanomedicine methods are not effective, and current methods efficiency is higher than nanomedicine methods, irrespective of age, gender and length of education.
Compared to the medical staff and patients respondents, more numbers of doctors have opined that nanomedicine methods side effects are fewer than current methods. Thus, nanomedicine methods have fewer side effects for doctors compared to medical staff and patients' respondents. Totally thirty nine percent of the respondents opined nanomedicine side effects is less than current methods. Therefore, majority of the respondents expressed that nanomedicine side effects is not fewer than current method and current methods side effects is less, Irrespective of organization, age, gender and length of education.

Compared to the medical staff and patients respondents, more numbers of doctors have opined that duration of treatment by nanomedicine methods is fewer than duration of treatment by current methods. Thus, nanomedicine methods have fewer duration of treatment for doctors compared to medical staff and patients' respondents. Totally, thirty eight percent of the respondents opined, duration of treatment by nanomedicine methods is less than current methods. Therefore, majority of the respondents expressed that duration of treatment by nanomedicine methods is not fewer than current method and duration of treatment by current methods is less, Irrespective of organization, age, gender and length of education.

Compared to the medical staff and patients respondents, more numbers of doctors have opined easy application of nanomedicine. Thus, nanomedicine methods have more easy application for doctors compared to medical staff and patients' respondents. Those having higher level of education also had more positive responses about easy application of nanomedicine methods. Totally twenty six percent of the respondents opined, use of nanomedicine methods is easy However, majority of the respondents expressed that use of nanomedicine method is not easy, Irrespective of organization, age, gender and length of education.

Eight percent of the respondents opined that costs of nanomedicine methods are not expensive. Therefore, majority of the respondents expressed that cost of nanomedicine methods are expensive for people, Irrespective of organization, type of respondents, age, gender and length of education.
Compared to the respondents from SSO, more numbers of respondents from under SSO contract have opined that nanomedicine methods are cost effective. Thus, nanomedicine methods are more cost effective for under SSO contract compared to SSO respondents. Therefore, compared to the medical staff and patients respondents, more number of doctors expressed that nanomedicine methods is cost effective. Thus, cost effectiveness of nanomedicine methods is more significant for doctors compared to medical staff and patients respondents. The age has positive sign and it is not significant. Accordingly, only twenty four percent of the respondents opined that nanomedicine methods are cost effective. Therefore, majority of the respondents expressed that nanomedicine methods isn't cost effective and current method is more cost effective, Irrespective of age, gender and length of education.

It has been found that the average cost of treatment for diabetic patient under the current method is 1584184 Rial and it is 5376818 Rial under nanomedicine method. The difference between the two is 3792634 Rial. It has been found that the difference between the two is significant. Therefore, cost of treatment is significantly high under nanomedicine method. However, as found in the perception analysis, people those using nanomedicine method, they have hope in reduction of cost of nanomedicine in future. Hence, the nano medicine method can be used in large scale in SSO for better and efficient treatment and for better results.

Compared to the medical staff and patients respondents, more number of doctors expressed that cost of nanomedicine products will be decreased in future. Totally sixty four percent of the respondents opined, cost of nanomedicine products will be decreased in future. Therefore, majority of the respondents expressed that cost of nanomedicine will be reduced in future, irrespective of organization, age, gender and length of education.

Eighty five percent of respondents felt that public training in nanomedicine field is necessary for health of people. Therefore, public raining is important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.
Compared to the medical staff and patients respondents, more number of doctors expressed that doctors have enough knowledge in nanomedicine field. Totally, only seven percent of respondents opined that the doctors have sufficient knowledge in nanomedicine field. Thus, majority of respondents expressed that the doctors don’t have adequate knowledge in nanomedicine field, and doctors' knowledge is very less, irrespective of organization, age, gender and length of education.

Ninety three percent of respondents felt that specialized courses are necessary for doctors. Thus, specialized courses for doctors are very important for majority of the respondents, irrespective of organization, type of respondents, age, gender and length of education.

Compared to the medical staff and patients respondents, more number of doctors expressed the necessity of development of research in nanomedicine field. Therefore, ninety three percent of respondents opined that nanomedicine research should be expanded in future. Thus, development of research in nanomedicine field is very important for majority of the respondents, irrespective of organization, age, gender and length of education.
Section B

4.3 Hypotheses Testing:

Section B deals with testing of hypotheses;

**Hypothesis No.1**

H₀: SSO not significantly depends on contract hospitals for serving the patients.

H₁: SSO significantly depends on contract hospitals for serving the patients.

SSO has been suffered physical resource constraints in providing health care services to insured people. Therefore, in order to compliment physical resources and developing health care services, the organization hires hospitals of private sector.

**Table 7.1**

**Comparison between Hospitals under Direct Control of SSO and Under Contract of SSO in Iran.**

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Hospitals under Direct Control of SSO</td>
<td>10</td>
<td>65.8000</td>
<td>2.44040</td>
<td>.77172</td>
<td></td>
</tr>
<tr>
<td>Number of Hospitals under Contract of SSO</td>
<td>10</td>
<td>667.1000</td>
<td>28.97681</td>
<td>9.16327</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>21.426</td>
<td>.000</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-65.389</td>
<td>9.128</td>
</tr>
</tbody>
</table>

Source: Computed by researcher, using SSO data

The above tables present average values for hospitals under direct control of SSO and under contract of SSO. The average number of hospitals under direct control of SSO were 65, also the average number of hospitals under contract were 667. The
difference between the two is 601. It has been found from the F-test that the variance between the series is significant and the equal variance was not assumed. It has been found from t-test that the average difference between hospitals under direct control and under contract is significant at five percent level. Therefore, there were more number of hospitals under contract serving for SSO patients compared to the hospitals belong to SSO. So, null hypothesis is rejected and alliterative hypothesis is accepted. Hence, dependency of SSO on under contract hospitals is significantly high.

Hypothesis No.2

H$_0$: SSO not significantly depends on contract specialists for serving the patients.

H$_1$: SSO significantly depends on contract specialists for serving the patients.

SSO has been suffered human resource constraints in providing health care services to insured people. Therefore, in order to compliment human resources and developing health care services, the organization hires specialists of private sector.

Table 7.2

Comparison between Number of Specialists under Direct control of SSO and under Contract of SSO

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Specialists under Direct Control of SSO</td>
<td>10</td>
<td>2437.2000</td>
<td>205.82560</td>
<td>65.08777</td>
</tr>
<tr>
<td>Number of Specialists under Contract of SSO</td>
<td>10</td>
<td>10043.5000</td>
<td>1134.51372</td>
<td>358.76474</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>17.064</td>
<td>.001</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed by researcher, using SSO data
The above tables present average values for number of specialists under control of SSO and under contract of SSO. The average numbers of specialists under direct control of SSO were 2437 and the average numbers of specialists under contract of SSO were 10043. The difference between the two is 7606. It has been found from the F-test that the variance between the series is significant and the equal variance was not assumed. It has been found from t-test that the average difference between number specialists under direct control of SSO and under SSO contract is significant at five percent level. Therefore, there were more number of contract specialists serving for SSO patients compared to the specialists belong to SSO. So, null hypothesis is rejected and alliterative hypothesis is accepted. Hence, dependency of SSO on contract specialists is significantly high.

**Hypothesis No.3**

H\(_0\): SSO not equally spends on direct health services as well as indirect health services.

H\(_1\): SSO equally spends on direct health services as well as indirect health services.

**Table 7.3**

Comparison between Expenditure Direct Health Services and Indirect Health Services

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure for direct health care</td>
<td>10</td>
<td>7600873.9000</td>
<td>5079203.25768</td>
<td>1606185.09932</td>
</tr>
<tr>
<td>Expenditure for indirect health care</td>
<td>10</td>
<td>7925073.1000</td>
<td>6696333.89245</td>
<td>2117566.70731</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.830</td>
<td>.374</td>
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<tr>
<td></td>
<td>324199.20000</td>
<td></td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>-.122</td>
<td>16.78</td>
</tr>
</tbody>
</table>

Source: Computed by researcher, using SSO data
The above tables present average values for expenditure of direct health sector (under control of SSO) and expenditure of indirect health sector (under contract of SSO). The average expenditure of direct health sector were 7600874 and the average expenditure of indirect health sector was 7925073. The difference between the two is 324199. It has been found from the F-test that the variance between the series is not significant and the equal variance was assumed. It has been found from t-test that the average difference between expenditure of direct health sector and expenditure of indirect health sector is not significant at five percent level. So, null hypothesis is rejected and alliterative hypothesis is accepted. Therefore, SSO equally spending on direct health services as well as indirect health services.

**Hypothesis No.4**

$H_0$: Substitution of new methods in medical is not necessary for health security of people in SSO

$H_1$: Substitution of new methods in medical is necessary for health security of people in SSO

Social security organization in order to providing adequate services to insured persons, increasing efficiency and cost reduction needs to advanced method of treatment. So, substitution of new methods in medical instead of current methods has been analyzed based on organization, type of respondents, age, gender, length of education. The binary probit model was used for the analysis.

\[
P = \beta_0 + \beta_1 Or + \beta_2 TR + \beta_3 Ag + \beta_4 Gr + \beta_5 LE + e
\]

Where,

$P = \text{Perception of respondents on substitution of new methods}$

\[
P = 1.567 -0.438 Or -0.097 TR +0.005 Ag -0.135 Gr -0.000 LE
\]

\[
Z = (2.01) (-2.59) (-0.47) (+0.60) (-0.80) (-0.01)
\]

\[
Sig = (0.045) (0.01 0) (0.637) (0.549) (0.422) (0.989)
\]

Number of obs = 300  LR chi2 (5) = 9.42  Prob> chi2 = 0.0935  Pseudo R2 = 0.0314

The probit model was used to estimate the impact of dimensions on respondents’ perception on substitution of new methods. It has been found from the results that the constant parameter has positive sign and it is significant. The organization has negative sign and it is significant. Therefore, compared to the
respondents from under SSO contract, more number of respondents from SSO opined the necessity of substitution of new method. Thus substitution of new methods is more important for SSO compared to under SSO contract. The type of respondents has negative sign and it is not significant. The age has positive sign and it is not significant. The gender has negative sign and it is not significant. Length of education has negative sign and it is not significant. Accordingly, *eighty percent of respondents felt substitution of new methods is necessary for health security of people*. Therefore, substitution of new methods is significant for majority of the respondents, irrespective of type of respondents, age, gender and length of education. So, null hypothesis is rejected and alliterative hypothesis is accepted. Hence, Substitution of new methods in medical is necessary for health security of people in Iran.

**Hypothesis No.5**

H_0: There are no differences between cost of traditional method of treatment and nanomedicine methods.

H_1: There are differences between cost of traditional method of treatment and nanomedicine methods.

**Table 7.4**

Comparison of Cost between Current and Nanomedicine Methods

(Expenditure in Rial)

<table>
<thead>
<tr>
<th>Group Statistics</th>
<th>Expenditure</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nano</td>
<td>30</td>
<td>5376818.9</td>
<td>1759406.9</td>
<td>321222.3</td>
</tr>
<tr>
<td></td>
<td>Current</td>
<td>30</td>
<td>1584184.8</td>
<td>346754.4</td>
<td>63308.4</td>
</tr>
</tbody>
</table>

**Independent Samples Test**

<table>
<thead>
<tr>
<th>Description</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>23.829</td>
<td>.000</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>11.584</td>
<td>31.249</td>
</tr>
</tbody>
</table>

Source: Field Survey Data.
It has been found from the above tables that the average cost of treatment for diabetic patient under the current method is 158418 Rial and it is 5376818 Rial under nanomedicine method. The difference between the two is 3792634 Rial. It has been found from the F-test that equal variance not found between the series. It has been also found from the t-test that the difference between the two is significant. Accordingly, the null hypothesis is rejected and alternative hypothesis is accepted. Therefore, cost of treatment is significantly high under nanomedicine method compared to nanomedicine method.

**Hypothesis No.6**

$H_0$: People have hopes that the Cost of Nanomedicine products will not be reduced in future.

$H_1$: People have hopes that the cost of nanomedicine products will be reduced in future.

Considering importance of cost of Nanomedicine products, cost reduction in future is considered an important factor in replacement of current methods. Cost reduction of nanomedicine products in future has been analyzed based on organization, type of respondents, age, gender, length of education. The binary probit model was used for the analysis.

$$P = \beta_0 + \beta_1 Or + \beta_2 TR + \beta_3 Ag + \beta_4 Gr + \beta_5 LE + \epsilon$$

Where,

- $P =$ Perception of respondents on nanomedicine cost in future
- $\beta_0 =$ Constant parameter
- $\beta_1 =$ Organization
- $\beta_2 =$ Type of respondents
- $\beta_3 =$ Age
- $\beta_4 =$ Gender
- $\beta_5 =$ Length of education

$$P = -1.006 + 0.147 Or + 0.325 TR + 0.009 Ag + 0.020 Gr + 0.011 LE$$

$$Z = (-1.42) (+0.98) (+1.78) (+1.2) (+0.13) (+0.28)$$

$$\text{Sig} = (0.156) (0.328) (0.075) (0.232) (0.896) (0.782)$$

Number of obs = 300  LR chi2 (5) = 11.49  Prob> chi2 = 0.0425  Pseudo R2 = 0.0293

The probit model was used to estimate the impact of dimensions on respondents’ perception on Nanomedicine cost in future. It has been found from the results that the constant parameter has negative sign and it is not significant. The organization has positive sign and it is not significant. The type of respondents has positive sign and it is significant. Therefore, compared to the medical staff and patients respondents, more number of doctors expressed that cost of nanomedicine will be decreased in future. The age has positive sign and it is not significant. The
gender has positive sign and it is not significant. Length of education has positive sign and it is not significant. According to sixty four percent of the respondents, cost of nanomedicine will be decreased in future. Therefore, majority of the respondents expressed that cost of nanomedicine will be reduced in future, irrespective of organization, age, gender and length of education. So, null hypothesis is rejected and alternative hypothesis is accepted. Therefore, cost of nanomedicine products will be reduced in future.

Section C

7.4 Policy Imperatives:

In this section researcher has made few policy imperatives, based on the present research works.

- Social security organization is one of the largest non-government foundation in Iran has been played very vital role in providing health care services to insured people. It has been identified the half of the population of Iran is under SSO coverage. Considering the importance of insurance in individuals' life and also increasing awareness about insurance benefits, more number of people has been covered by SSO. Therefore, SSO ought to provide adequate services for all the insured in order to fulfill necessary needs, particularly in health care services. But SSO has resource constraint due to financial limits. It has been also identified by the study that the available resources have not been utilized efficiently. Hence, there is a need to effective, optimal utilization of resources for better service delivery.

- It has been identified that SSO has been suffered from physical resources constraints, such as hospitals, clinics, day clinics and Para-clinics. In order to compliment physical resources and providing adequate health care services to insured people, SSO has been depending on contract services. It has been created two kind of problems; huge financial burden to SSO. This is an uncertainty in services delivered by private contract hospitals. Hence, SSO has to establish its own physical infrastructure; in order to the needs of insured people to be met efficiently.

- The SSO not only suffering from physical resources it also has human resources constraint. As a matter of fact it has been heavily depending upon private doctors and medical staff on contract basis, which is always involving
uncertainty in delivery medical services. It is not only uncertainty of service delivery, SSO also spending huge money for hiring the services. Instead of hiring services, SSO can save money and can improve service delivery system by employing doctors and medical staff on permanent basis.

- It has been identified by the study that SSO has both physical and human resource constraint due to lack of finance to invest in this sector. It has been also found from the insurance literature that apart of insurance payment has been maintained by governments as security formalities. If this money could have been released by the government of Iran to SSO, then improvement of physical and human resources becomes easier.

- While establishing new physical infrastructure, the more emphasis could be given to nanomedicine, since, it has got long time benefits and relative efficiencies.

- It has been identified by the study that the awareness among the people about the usefulness of nanomedicine is very low. Hence, SSO can have awareness programs in order to provide sufficient information about nanomedicine.

- It has been also found from the study that the competency of doctors in use of nanomedicine is also not sufficient. Hence, there is a need of providing training to doctors and medical staff, as perquisite to implement nanomedicine in the Iranian health care services.

### 7.5 Conclusions:

The study examined the role of SSO in delivering health care services to insured people. In Iran, SSO has been faced financial constrains in developing physical health infrastructure and providing efficient health care services. If SSO could have been able to get sufficient financial support from government of Islamic Republic of Iran, SSO can improve the service delivering system. While thinking of alternatives to the existing system, nanomedicine could be better options in ensuring efficient health care services delivery, which can also reach the large sections of the insured people. The present study sincerely attempted to examine the feasibility of implementation of nanomedicine system through SSO and found there is a dire need of implementation of nanomedicine in order to improve health care delivery system in Iran.