

Study on Full Immunization Coverage of Children Aged 12-
23 Months Under Universal Immunization Programme in
Porbandar District, Gujarat

By

Ambika Mehrotra

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2016-2018



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TO WHOMSOEVER MAY CONCERN

This is to certify that **Ambika Mehrotra** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at **National Health Mission, Gujarat** from 5th February 2018 to 5th May 2018.

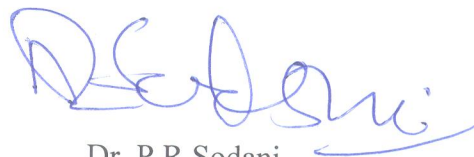
She has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific, and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



Col. (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Dr. P.R. Sodani
Acting President
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District Programme Management Unit
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The certificate is awarded to

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In recognition of having successfully completed her
Internship in the department of

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And has successfully completed her Project on

**FULL IMMUNIZATION COVERAGE OF CHILDREN AGED 12-23 MONTHS IN PORBANDAR
DISTRICT, GUJARAT**

5 FEB 2018- 5 MAY 2018

NHM, GUJARAT

She comes across as a committed, sincere and diligent person
who has a strong drive and zeal for learning
We wish her all the best for future endeavors

Chief District Health Officer

Date: 11.5.18

Place: Porbandar

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "A study on Full Immunization coverage in children aged 12-23 months under Universal Immunization Programme in Porbandar District, Gujarat and submitted by Ambika Mehrotra, MBA-HM(21); 0381 under the supervision of Dr. P.R. Sodani for award of MBA in Hospital and Health Management in Health and Hospitals of the University carried out during the period from 5th February 2018 to 5th May 2018 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


Signature

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ABSTRACT

Communicable diseases prove to be a leading cause of mortality and morbidity among children. Many infectious diseases can be prevented through vaccination thus immunization is one of the cost-effective measure for child survival. Since last many years Universal Immunization Programme (UIP) has been run by the government to cover maximum children under immunization, the coverage has substantially increased since independence due to the successful implementation of UIP but still there are certain pockets which remains uncovered and these only halts the process of full coverage in the entire country. The primary and the crucial step is to keep an eye on the dropouts to enhance the coverage of immunisation. And to track the overall coverage of individual vaccines to ensure full immunization. Also, birth order of the child seems to have some significant relation with the child's immunization status

ACKNOWLEDGEMENT:

After an intensive period of 3 months today is the day writing this vote of thanks is the finishing touch to my dissertation. It has been a period of great learning for me not only in the scientific area but also at the personal level. Writing this dissertation has had a big impact on me. I would like to reflect on the people who have supported and helped me throughout this period.

First of all I would like to pay the heartiest thanks to my college, The IIHMR University for instilling all the required knowledge and skills in me during the academics that helped me everywhere while conducting my research by exploring the field of public health at the grass root level.

My sincere vote of thanks to my college mentor Dr P.R Sodani IIHMR University for his valuable suggestions and timely guidance. He was always willing to guide me and support me during the process.

I would like to thank Dr. S.K. Mod, Chief District Health Officer, Porbandar for his constant guidance and cooperation in conducting the study. He provided me with all the resources and opportunities I required in order to complete my dissertation timely in district Porbandar, Gujarat

In addition I would like to thank the local level field workers like ANMs, Ashas, MPWs for helping me while data collection in a district.

Last and the utmost important my family and friends for their wise counsel and sympathetic ear.

Thanks a lot everyone!

~Ambika Mehrotra

(Health & Hospital Management-21, 0301)

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ABBREVIATIONS

ANMs- Auxillary Nurse midwives
ASHA- Accredited Social Health Assistant
BCG- Bacillus Calmette Guerin
DLHS- District Level Household Survey
DPT- Diptheria, Pertusis, Tetanus
EPI- Expanded Programme Immunization
HEP- B- Hepatitis B
IMI- Intensified Mission Indradhanush
IPV- Injectible Polio Vaccine
MCP Cards- Mother Child Protection Card
MCTS- Mother Child and Tracking System
MPW- Multi Purpose Worker
NFHS- National Family Health Survey
NPP- National Population Policy
OPV- Oral Polio Vaccine
Penta- Penta
RI- Routine Immunization
UIP- Universal Immunization Programme
VPDs- Vaccine Preventable Diseases

INTRODUCTION

Infectious diseases share a maximum proportion when it comes to morbidity and mortality of children. And to curb this problem Immunization is one of the most significant and cost-effective health intervention. In 2012, WHO estimated that vaccination prevents 2.5 million deaths each year, with 100% immunization and 100% efficacy of the vaccines one out of 7 deaths in children could be prevented mostly in developing countries. Globally about one-quarter or 25% of the under-five mortality is due to vaccine preventable diseases. (1)

Even with all the consistent efforts made by the governmental and non-governmental institutes for 100% immunization coverage, there are still low covered areas. In India, immunization services are offered free of cost in public health facilities, but despite rapid it, the immunization rate remains low in some areas. According to the National Family Health Survey (NFHS-4) 2015-16, in India 62% of the children f age one to two years have been fully immunized, whereas in Gujarat only 50.4 % children were fully immunized which is quite less than that of the country's status (2,3)Also in rural area of Gujarat, 50.4% children were fully immunized (4)

As per the full Immunisation definition by WHO- A fully Immunized child is one who has received 1 dose each of BCG, and Hepatits-B, And then 3 doses each of DPT and Polio vaccine and 1st dose of measles at 9 months

But in many states of India,(So as in Gujarat) instead of DPT vaccine, Penta vaccine is Administered which is combination of 5 vaccines i.e DPT, HEP-B and HiB,

FIGURE-1 Vaccination as per the National Immunization schedule by Government of India

Age	Vaccines
Birth	BCG, OPV(0), Hep B Birth dose (To be given at the place of delivery)
6 Weeks	OPV1, Penta1(DPT+HepB+HiB)
10 Weeks	OPV2, Penta2(DPT+HepB+HiB)
14 Weeks	OPV3, Penta3(DPT+HepB+HiB), IPV
9 Months	MMR-1, /MR/ Measles, JE Vaccine-1
16-24 Months	MMR-1, OPV DPT 1st Booster, JE Vaccine-2
5-6 Years	DPT 2nd Booster
10 Years	TT1
16 Years	TT2

Unimmunized and partially immunized children were more susceptible to childhood diseases. (5)

To improve the immunization coverage, Government of India has also launched Mission Indradhanush closely monitored by Prime Minister Office. E-Mamta based tracking of children is being done by Government of Gujarat along with revision of Routine Immunization (RI) Micro plans to cover 100% areas, expansion of cold chain points, Survey by family health welfare, concurrent monitoring of routine immunization (RI), Mission Indradhanush (MI) to achieve maximum coverage.

As per the full Immunisation definition by WHO- A fully Immunized child is one who has received 1 dose each of BCG, OPV, and Hepatitis-B, And then 3 doses each of DPT and Polio vaccine and 1st dose of measles at 9 months.

The present study was planned to assess the full immunization coverage in the rural field area of Porbandar district, Gujarat to find out the relation between birth order and immunisation status of children using the WHO thirty cluster sampling technique.

REVIEW OF LITERATURE

According to the National Population Policy (NPP) universal immunization of children against all vaccine-preventable diseases should be achieved. Despite all the efforts put in by the governmental and non-governmental institutes for 100% immunization coverage, there are still pockets of low coverage areas. The Government has launched “Mission Indradhanush” on 25th December 2014 with an aim to cover all children who are partially vaccinated or unvaccinated. The Mission focuses on interventions to rapidly increase full immunization coverage of children by approximately 5% annually and to expand full immunization coverage from 65% in 2014 to at least 90% children in the next five years.

An NFHS based trend comparison shows that prior to the NRHM, full immunisation coverage in India improved at a sluggish pace from 35.4% in 1992-93 to 42% in 1998-99 and 44% in 2005-06. The most recent wave of NFHS finds that immunisation coverage has now increased to 62% in 2015-16. Although post-NRHM, the pace of improvements has accelerated but it leaves much to be desired when compared to achievements in institutional births that improved from a similarly low level of 39% in 2005-06 to 79% in 2015-16. It may be reminded that eliciting immunisation-related information involves considerable recall ability or possibility of households to have safely kept an updated record of vaccines usually provided by health care facilities in the form of an immunisation card (Mother-Child Protection Card). In this regard, NFHS 2015-16 results seem to be valid, as more or less similar findings emerged from the Rapid Survey on Children conducted in 2013-14 with immunisation coverage of about 65% for all India.

In a study conducted by Chintu C. Chaudhary et al in Ahmedabad 2016 the Overall immunization coverage in the study was 80.7% which was above the national average (NFHS or DLHS). Improvement should focus on bottlenecks by reducing the dropout rate from Penta 1st dose to Penta 3rd dose and improving coverage of measles (and vitamin A). The remaining deficiency may be overcome by generating awareness among the community by holding mother’s meetings and extensive social behaviour change communication programs, inviting opinions and suggestions from them, and enhancing community participation.(5)

In a study conducted by Harsh Mahajan an unfortunate fact is that inspite of massive IEC activities by the government emphasizing the significance of immunization; a vast majority of population is still unaware of the importance of immunization and have only a superficial knowledge of the immunization schedule. This study gives a message for all policy makers and healthcare providers, in that, providing the resources for immunization alone is a job which is half done and that health education to the beneficiaries as well as health care providers is one of the vital components towards achievement of universal immunization coverage.(6)

In a study conducted by A.M Kadri et al, the Full immunisation coverage of children was primarily low due to not immunised with measles vaccination. It is suggested that some form of health care packages under the Maternal and Child Health (MCH) programme; such as iron, folic acid or Vitamin A supplementation, or the provision of iodized salt can be given to attract parents especially to sustain contact for the time between DPT-3 and measles vaccinations. (7)

A study by sheth Jay k. et al the verification of card for vaccination is an important determinant during the survey, health functionaries must act proactively to deliver the 4 key messages to every mother/caretaker during the vaccination session.¹⁴ This includes 1) information regarding the vaccine and the disease it prevents 2) information regarding the next visit 3) dealing with minor side-effects of the given vaccine & 4) keeping the vaccine card safely & to bring it during the next visit. These simple key messages not only address the parent's concern but also address important issues like preserving the vaccination card.⁽⁸⁾

The study by Ramaswamy G et al, shows a significant difference in delay in vaccination for children with higher birth order. This may be related to the behaviour of the mothers on child care.^{11,14} In the study, children of first birth order received vaccine within 17 median days. The third or more birth order children received vaccine with 25 median delayed days. Similar results were found in secondary analysis of NFHS one results. The children of four or more birth order have 1.52 times increased risk of delayed vaccination.

RATIONALE

As per NFHS-4 India's Immunization status is 62% compared to that of Gujarat is only 50.4%. Also, if we talk about Porbandar district, here only 68.8% children are fully immunized which is better than the two above mentioned figures but still the district besides being smaller in the state hasn't achieved even 90% coverage yet. The Government is on its toes to enhance the immunization coverage for which Intensified Mission Indradhanush has been launched to cover the uncovered pockets. Also, many studies say that with the increase in birth order the adherence or the awareness of parents to get the child fully vaccinated decreases. Hence the present study was planned to assess the full immunization status of children and to review the relation between birth order and immunization status of children of age 12-23 months in Porbandar district of Gujarat state of India.

RESEARCH QUESTION

- 1.What is the full immunization coverage among the children of age 12-23 months in Porbandar district, Gujarat?
- 2.How does the full immunization status vary with the birth order of the children?

OBJECTIVE

- 1.To assess the Immunization status of 12-23 months old children.
- 2.To analyse the association between the birth order of children and their Immunization status.

METHODOLOGY:

It is retrospective cross-sectional study which was carried out in Porbandar district which is under field practice area of Health Department, NHM, Porbandar, Gujarat. A coverageevaluation survey was done during a period of 3 months i.e from February 2018 to May 2018 among children aged 12-23 months in Porbandar district, Gujarat, using the WHO 30- cluster survey methodology. There are total 84 subcentres in the district having population of 585,449 (census 2011) with 253 per sq. km population density having 950 as a sex ratio (census 2011).

Sampling Technique and Sample size estimation:

The 30-cluster sampling technique advocated by the WHO was used to assess coverage of immunization due for respective age in 12–23 months children. The 30- cluster sampling technique is a two-stage random sampling technique (i.e., selection of clusters and identification of children in the selected clusters). The first step involved listing of all the clusters (i.e., total 84 subcentres in Porbandar District and, of them, a total of 30 subcentres were chosen randomly (every 6th). In each selected subcentre, the first household to be visited was chosen randomly. All the eligible children of 12–23 months of age in that household were part of the study frame. After the first household was visited, the interviewer moved to the next household using the pen drop approach, and the same process was repeated. If any household was found to be locked or any mother refused to participate in the study, or if any household did not have eligible child, the interviewer skipped that household and moved to the next household. This process was continued until a total of seven children were covered in each cluster, and, in this way, all the 30 selected subcentres were covered, thus making a total sample size of 210 (30×7).

Data collection and Statistical analysis:

Data was collected using pre-designed pre-tested questionnaire filled during home visit by verifying with the immunization card. The data is analysed in MS-Excel and is represented in the form of percentages depicted through graphs and tables.

Inclusion Criteria:

- Children of age between 12-23 months were taken for the study
- Children of Immigrated families were included in the study
- Households having 2 or more children under 2yrs of age are taken into consideration

Exclusion Criteria:

- Children who were younger than 12 months and over 2 years were excluded from the study and also the children of emigrated families.

Full Immunization:

Children who have received one dose of BCG, three doses each of OPV, DPT*, and Hepatitis B vaccines, and one dose of measles vaccine before reaching one year of age.

Partial/incomplete immunization:

Children who have received at least one of the above-mentioned vaccines up to 1 years.

Non-Immunization:

Children who haven't received any of the vaccine before reaching one year of age

Ethical consideration:

The study has maintained the confidentiality of the respondents. Information used by the respondents was not misused in any form.

RESULTS:

The immunization status was assessed for the children between the age group of 12-23 months.

FIGURE- 2 Overall Immunization Status of children (n=210)

sex	fully immunized	%	partially immunized	%	unimmunized	%
females	57	41.9	36	48.6	0	0.0
males	79	58.1	38	51.4	0	0.0
total	136	64.8	74	35.2	0	0

Figure 1 represents that Out of 210 children only 136 (65%) children were fully immunized, 74 (35%) children were partially immunized, and no child is unimmunized. And out of total 93 females approx. 42% are fully immunized and about 49% are partially immunized. Apart from that, out of total 117 male children about 58% were fully immunized and about 51% male were partially immunized.

FIGURE-3: Individual vaccine coverage (n=210)

Vaccine	MALE	FEMALE	TOTAL
BCG	117	92	209
%	56	44	99.5
OPV	97	78	175
%	55.4	44.6	83.3
HEP -B	80	62	142
%	56.3	43.7	67.6
PENTA-1	116	93	209
%	55.5	44.5	99.5
IPV-1	116	93	209
%	55.5	44.5	99.5
PENTA-2	114	92	206
%	55.3	44.4	98.1
IPV-2	114	92	206
%	55.3	44.4	98.1
PENTA-3	113	91	204
%	55.4	44.6	97.1
IPV-3	113	91	204
%	55.4	44.6	97.1
MEASLES	113	88	201
%	56.2	43.8	95.7

Here,figure 2 represents the coverage of individual vaccines. Overall BCG vaccine coverage was 99.52%. Adding to that,the total Hepatitis B coverage is approximately 68%, Overall PENTA1, PENTA 2 and PENTA 3 vaccination coverage was 99.5%, 98.1% and 97.1% respectively. As per the study, overall , OPV 1, OPV 2, OPV 3 vaccination coverage was99.5%,98.1%, 97.1% respectively, Lastly, the Measles vaccination coverage in the present study was approximately 96%.

FIGURE 4: Dropout rates of different vaccines

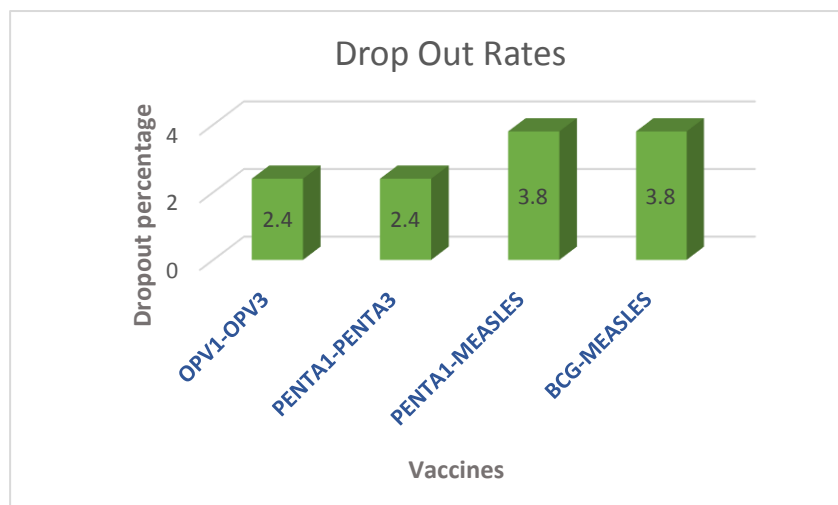
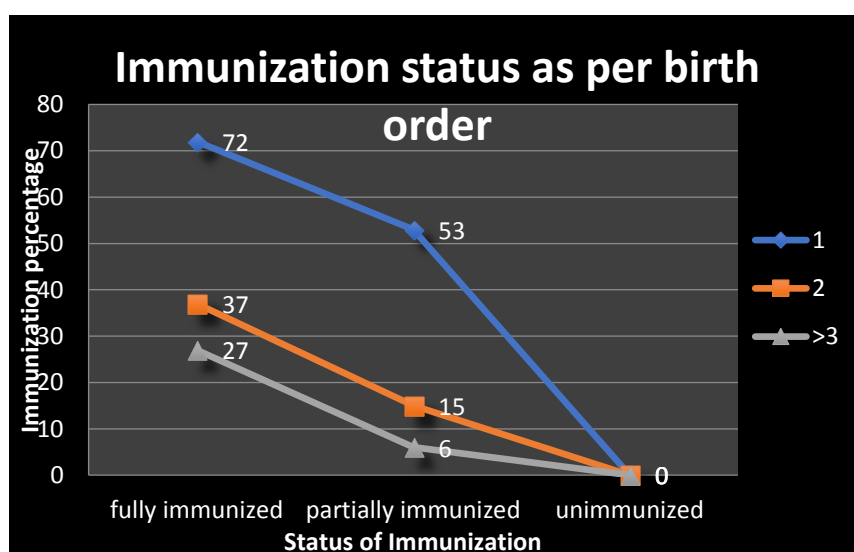


Figure 3 represents the dropout rates, which states that the overall dropout rate each from OPV 1stdose to OPV 3rd dose and Penta 1st dose to Penta 3rd dose is 2.4%. Further the overall dropout rate each from Penta 1st dose to measles 1st dose and BCG to measles 1st dose is 3.8%

FIGURE 5: Gender wise Immunization status as per birth order of children



Above fig represents the relationship between the full immunization status among the children and their birth order. Out of total 136 fully immunized children, 72, 37 and 27 children are of the birth order 1,2 and greater than 3 respectively. Further, out of total 74 partially immunized children, 53,15 and 6 children are of the birth order 1,2 and greater than 3 respectively.

DISCUSSION:

Immunization card/ Mamta card is one of the important tools for assessing immunization status and as a documentary record. Also 30 cluster sampling is a quite useful and cost-effective measure to estimate the immunization status of any area. In the present study, it is estimated that out of total 210 children 136 (65%) children are fully immunized in rural parts of Porbandar out of which 42% females and 58% males are fully immunized while as per NFHS 4 Report of 2015-16 about 76.4% children from rural pockets are fully immunized. This study also says that only 35% children are partially immunized. It's a good fact that no unimmunized child has been found while doing the study in a district.

As per this study, if we talk about the individual coverage of vaccines then the highest coverage i.e 99.5% each is observed in BCG, Penta1 and OPV1 vaccines while according to NFHS-4 BCG coverage is around 93%. Importantly, the coverage of hepatitis B vaccine is least in the district (~68%) which clearly depicts that lower coverage of Hepatitis B Vaccine has contributed maximum in decreasing the full immunization coverage of the district. Also, according to our study the coverage of all 3 doses of polio vaccine is around 98% which is around 76% as per NFHS-4. Lastly, the coverage of OPV and Measles 1st dose is approximately 83% and 96% respectively while according to NFHS-4 measles coverage is ~97%. The key observation depicts that the vaccines which were scheduled to be given to the child on the same day, are not administered likewise to many subjects. Example in case of BCG and Hepatitis B which were meant to be given together on birth but were not given as stated, so they were not mentioned in many of the mamta/MCP cards, perhaps they might have been left out to receive that particular vaccine.

Adding to this, as far as dropout rates of individual vaccines is concerned, the maximum dropout rate (3.8%) has been observed each in between Penta 1st to measles 1st dose and between BCG to Measles 1st dose. In our study good coverage of Penta indicated good service utilization by people of area studied. Here, dropout between Penta 1st dose to Penta third dose and OPV1 TO OPV2 is just 2.4% which depicts good service utilization indicating good health care infrastructure/ resources with good demand in the area studied.

Regarding the association between the birth order and immunization status, it can be interpreted from the data that as the birth order keeps on increasing the adherence of the parents to get the child fully immunized decreases. More number of Children of the 1st birth order is fully immunized (approximately 53%) than from the second (27%) and 3 birth order (20%). Similar trend can be observed in partially immunised children too.

However, study done in single area Porbandar city limits us to generalize the results. There is definitely a need for well-planned, large-scale studies using standardized methodologies to estimate coverage of the entire district on regular basis.

CONCLUSION:

The study highlights that though the immunization coverage in the area is better than the state's average, but a further improvement is needed because it still lags behind the UIP target of 100% coverage. We identified substantial dropout rate which shows need of effective surveillance and tracking system. Improvement should focus on bottlenecks by reducing the dropout rate from Penta to measles and BCG to measles vaccines. Also, the close monitoring is required to enhance the coverage of Hepatitis B vaccine. The other interventions like continuous awareness programs regarding the complete vaccination and its importance and involving Community by inviting opinions and suggestions from them, to tackle out the issues they face can help in upgrading the immunization performance of the district.

LIMITATION:

Data was collected only through the information given in the mamta cards (MCP cards) during household visit. Recall factor was not taken into consideration due to language issue and time constraint, that's why no proper reasons have been studied about the children for not getting fully or partially vaccinated.

ANNEXURES

IMMUNIZATION SURVEY QUESTIONNAIRE

Name of Respondent _____ Village _____

District _____

Name of PHC _____

Block _____

Rural/Urban _____

1) Name of child _____ 2) D.O.B _____ 3) Sex of child _____

4) Father's Name _____ 5) Mother's Name _____

6) Number of Siblings (a) 1 (b) 2 (c) >3

S.NO	VACCINES
1	BCG
2	HEPATITIS B
3	PENTA 1
4	OPV 1
5	PENTA 2
6	OPV 2
7	PENTA 3
8	OPV 3
9	MEASLES 1

NFHS 4 Fact sheet, INDIA (2015-16)

[India NFHS 4.pdf](#)

NFHS 4 Fact sheet, GUJARAT (2015-16)

[GJ_FactSheet.pdf](#)

NFHS 4 Fact sheet, PORBANDAR (2015-16)

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