

Determinants of Contraceptive Method Choice in Sri Lanka: An Update of a 1987 Survey

*Demographic factors continue to have
the dominant effect on method choice,
over socio-economic factors*

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Recent studies have emphasized the policy and programmatic importance of understanding the choice of contraceptive method use and the factors affecting contraceptive choice (Bulatao, Palmore and Ward, 1989; Tsui

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and Herbertson, 1989). The purpose of this article is to analyze the socio-cultural and demographic determinants of contraceptive method choice in Sri Lanka. The study is an update of a previous study on this topic by Kahn, Thapa and Gaminiratne (1989). The previous study analyzed the determinants of contraceptive choice at two time periods, 1975 and 1982. It considered four current contraceptive choices: no use, use of a traditional method, use of a modern temporary method and use of sterilization. The analysis showed that, both in 1975 and 1982, socio-demographic factors had a strong influence on whether any method was used. However, in both the time periods, the type of method chosen was primarily a function of demographic factors related to the couple's family-building stages rather than socio-economic factors, implying that in Sri Lanka there are few socio-economic barriers to accessibility and choice of contraceptive methods.

By extending the analysis to a recent time period (1987), this article examines changes in the pattern of contraceptive method choice in Sri Lanka. More specifically, we focus on three interrelated questions: (a) Do the demographic and socio-economic factors continue to exert the same type of influence over the use of any method versus the use of no method at all? (b) Does the influence of socio-economic factors continue to be attenuated, and has the effect of the family-building stage gained increasingly more in prominence? (c) Has the choice of birth-spacing methods become more pronounced and sterilization less used in recent years and, if so, which strata of population have experienced these changes? The first two questions bear on the importance of understanding the process of the diffusion of contraceptive innovation, while the third reflects on policy and programmatic issues, as the Government of Sri Lanka has attempted in recent years to emphasize the use of modern birth-spacing methods through its family planning programmes.

Data and methods

The data analyzed in this article come from the Demographic and Health Survey conducted in Sri Lanka during 1987. For purposes of the Survey, the total geographic area in Sri Lanka was stratified into nine socio-economic and ecological zones. Each zone was further stratified by urban, rural and estate areas. Because of civil disturbances, two zones representing the northern and eastern areas of the country were excluded from the Survey. These two zones comprise approximately 14 per cent of the total population of Sri Lanka and are relatively less advanced than others. Hence, the implication of this exclusion is that the fertility level and con-

traceptive prevalence estimated from the Survey can be slightly biased upward, relative to an estimate based on the entire population.

In the remaining seven zones, the total number of households listed for interviews was 8,119. From these household records, a total of 6,170 ever-married women aged 15-59 were identified for more detailed interviews. Field interviews took place during early 1987. The overall response rate was 95.1 per cent; in the capital metropolitan area, Colombo, the response rate was the lowest, 89.9 per cent.

The sample was designed to be self-weighting within each zone. However, in the estate sector in one zone, the survey design included an over-sampling. A more detailed description of the sampling procedures and estimates of the sampling errors are provided in the study report (Sri Lanka Ministry of Plan Implementation, 1988).

In the present analysis, the sample is limited to the 5,449 currently married women between the ages of 15 and 49 at the time of the Survey. The data set has been weighted (but scaled to the original sample size) to adjust for varying sampling probabilities and non-response among the strata.

As with the previous study, in modelling current contraceptive use, four possible outcomes are considered: (a) not currently using any method, (b) using a non-programme ("traditional") method, (c) using a modern temporary method and (d) sterilization. The term "choice" is used interchangeably with the current use of a method, assuming that the acceptance and use of a method involve at least some considerations of method choice on the user's part.

As also discussed in the previous study, the timing of the decision to get sterilized becomes an issue when determinants are specified. In some cases, the decision to be sterilized may have been made several years preceding the Survey. Nevertheless, since sterilization constitutes a significant share of the method mix in Sri Lanka, we have retained it in the analysis by limiting the explanatory variables to those that can be justified as being fixed prior to the time when sterilization decisions are made. In the interest of comparability, the socio-cultural and demographic explanatory variables used in the previous study have been retained.

Because the dependent variable involves four distinct choices, a multinomial logistic model is used as the analytical technique (Maddala, 1983). The results are presented first as coefficients and then as predicted probabilities. A separate set of coefficients is simultaneously estimated for each comparison of choices; the analysis of four contraceptive-choice outcomes

results in six possible comparisons. In order to get the predicted probabilities, simulations derived by evaluating the regression equation for different combinations of the explanatory variables are used.

In the previous study, only the interaction effects of parity and marital duration were found to be statistically significant: hence, the inclusion of only this interaction term in that analysis. For maintaining comparability and, more importantly, in order to assess whether the interaction term continues to exert similar types of influence in the recent time period, the present analysis specifies modelling similar to that in the previous study.

Results

Changes in contraceptive use and method mix from 1975 to 1987 are shown in [table 1](#). Overall use in Sri Lanka continues to show an increase between 1982 and 1987, although not nearly as dramatically as was the rise between 1975 and 1982. The most striking feature of the 1987 method mix is an even greater prominence of sterilization: of the 62 per cent of the women currently practising contraception, about half were relying on sterilization while this was the case for less than 40 per cent of the women in 1982, and only about 30 per cent in 1975. The trend towards a somewhat lower use of



Between 1975 and 1987, there has been a large increase in the number of married women in Sri Lanka practising contraception.

Table 1: Percentage of currently married women aged 15-49 using contraception, by type of method, Sri Lanka, 1975-1987

Method	1975	1982	1987	1982-1987 (% points)
All	34.4	57.8	61.7	3.9
Modern temporary	9.6	9.9	10.8	0.9
Pill	1.7	2.7	4.1	1.4
IUD	5.2	2.9	2.1	- 0.8
Condom	2.3	3.3	1.9	- 1.4
Other modern	0.4	1.0	2.7	1.7
Sterilization	10.6	22.0	29.8	7.8
Traditional	14.2	26.0	21.1	- 4.9
Rhythm	8.9	14.2	14.9	0.7
Withdrawal	1.6	5.1	3.4	- 1.7
Other traditional	3.7	6.7	2.8	- 3.9
None	65.6	42.2	38.3	- 8.5

Source: Sri Lanka Demographic and Health Survey, 1987, May 1988.

Notes: Data from the northern and eastern provinces have been excluded from the 1975 and 1982 surveys in order to make these two surveys comparable with the geographic areas covered by the 1987 Survey. All estimates in this and subsequent tables are based on weighted data; pregnant and infecund women are considered non-users.

traditional methods must be interpreted cautiously, however, because of the possible fluctuation in reporting and questionnaire wording from survey to survey. It has been suggested, for example, that traditional-method use may have been considerably underreported in the 1975 Survey, both because of insufficient probing and a lack of respondent identification of such methods as contraception (Caldwell *et al.*, 1986). Conversely, reporting may have been high during 1982 owing to greater awareness as well as probing. Although it does appear from the 1987 Survey that traditional methods may be losing some of their dominance, it is striking that this has not resulted in a corresponding increase in the use of modern temporary methods, which show a steady prevalence of around 10 per cent for all three surveys.

The demographic and socio-economic characteristics for the users of each method type, as well as non-users, for 1987 are presented in [table 2](#).

Most of the differentials in user characteristics are along expected lines. Sterilized women (referring to women who are either sterilized themselves or whose husbands are sterilized) had been married longer and had from 1.3 to 1.9 more children than the women in the other groups. They were also married younger, reflecting to some degree the fact that they belonged to older cohorts at the time of the Survey. Women practising modern temporary methods had been married relatively recently and also had the lowest parity levels among users. This suggests there was both innovative behaviour and the motivation of child-spacing among younger women who were using these methods.

Users, on the whole, were slightly more urban than non-users and, except for those practising sterilization, they were better educated as well. The overall sample was relatively well-educated, with 59 per cent of women having at least some secondary education and, therefore, the differential for sterilized women is especially remarkable since these women were not even as well educated as those who use no contraception at all. It is possible that the selective nature of government campaigns was responsible for the higher prevalence of sterilization among the less educated (Thapa *et al.*, 1987).

Women practising either traditional or modern temporary methods, on the other hand, were relatively better educated compared with both non-users and sterilized women, as was the case with their husbands. We can observe ethnic differentials as well, with the relative prominence of Sinhalese among both modern temporary and traditional method users, and the Tamils and Moors among the non-users.

It must be noted that, owing to the elimination of the northern and eastern provinces, the 1987 Survey's sample of currently married women is somewhat less urban and considerably more Sinhalese than would be the case if the entire country had been sampled. For example, in its entirety, the 1975 Survey showed 18 per cent urban, and the 1982 Survey showed 24 per cent urban, among currently married women as opposed to the 16 per cent observed in the present case. Similarly, these two surveys sampled only 67 per cent and 71 per cent Sinhalese, respectively, as opposed to the very high 87 per cent in the current sample. In terms of the other characteristics, the present sample consists of better-educated, later-married women with longer marital durations and lower parities than was true for the previous surveys. Although some of this is probably due to selection bias, the change in characteristics is also reflective of overall educational improvements, later marriage and continued fertility decline in Sri Lanka.

Table 2: Mean values and percentage distributions of explanatory variables by method type, Sri Lanka, 1987

Variable	Modern	Sterilization	Traditional	Non-use	Total
	temporary				
Marital duration (years)					
<5	0.29	0.02	0.19	0.37	0.22
5-14	0.52	0.45	0.48	0.36	0.43
15+	0.19	0.54	0.33	0.26	0.35
Age at marriage	20.60	19.40	21.80	21.30	20.80
No. of living children	2.50	4.00	2.70	2.10	2.82
Place of residence					
Urban	0.17	0.16	0.18	0.15	0.16
Rural	0.83	0.84	0.82	0.85	0.84
Ethnicity					
Sinhalese	0.92	0.87	0.93	0.83	0.87
Sri Lankan Tamil	0.02	0.03	0.01	0.03	0.02
Indian Tamil	0.02	0.06	0.02	0.07	0.05
Moor	0.04	0.04	0.04	0.06	0.05
Other	0.01	0.01	0.00	0.01	0.01
Wife's education (years)					
None	0.04	0.14	0.05	0.13	0.11
1-5	0.22	0.39	0.21	0.28	0.30
6-9	0.42	0.35	0.39	0.35	0.36
10+	0.31	0.13	0.35	0.23	0.23
Husband's education (years)					
None	0.02	0.06	0.02	0.05	0.05
1-5	0.21	0.36	0.22	0.31	0.30
6-9	0.42	0.42	0.38	0.36	0.39
10+	0.35	0.16	0.38	0.27	0.27
Unweighted N	554	1,657	1,121	2,117	5,449

Table 3: Direction and significance of polytomous logistic regression coefficients for six comparisons of choice of contraceptive methods, Sri Lanka, 1987

Variable	Modern temporary versus non-use	Sterilization versus non-use	Traditional versus non-use	Modern temporary versus non-use	Sterilization versus traditional	Modern temporary versus sterilization
Marital duration						
<5 years	-	---	---		---	++
15+ years		++	++		++	---
Age at marriage	---	---		---	---	---
No. of living children	++	++	++		++	---
Urban residence		++				
Ethnicity						
Sri Lankan Tamil			---		+	
Indian Tamil	---	---	---	+	++	---
Moor	---	---	---			
Other			-			
Wife's education						
None	-	---	---			
6-9 years	++	---	++		---	++
10+ years	++	++	++		---	++
Husband's education						
None	++	++	++		---	++
6-9 years	++	++	++		---	++
10+ years						
Interactions						
No. of children and marital duration:						
< 5 years	++	++	++	+	---	++
15+ years	---	---	---	-	---	
Ratio	.220	.438	.355	.321	.586	.266

Notes: Positive relationships significant at + = 5 percent; ++ = 1 percent; +++ = 0.1 per cent; negative relationships similarly indicated by minus signs; blanks = non-significant

The effect of both demographic and socio-economic factors on method choice is analyzed using a multinomial logit model in which the log-odds of the type of contraceptive use (or non-use) are modelled as a function of marital duration, age at marriage, number of living children, place of residence, and both spouses' education. Since the effect of parity on method choice is expected to be dependent on marital duration, an interaction effect between these two variables is also modelled. A summary of the results for the polytomous logistic regression is presented in [table 3](#). For each of the six possible comparisons of method choices, a separate set of coefficients was estimated simultaneously. While the full coefficients are presented in the [appendix table on pp. 34-35](#), the direction and significance of the coefficients are presented in [table 3](#). Each of the three method choices is contrasted with non-use as well as with each other, and the share of the comparison choosing the first method choice is also shown. For example, among non-users and modern temporary method users, 22 per cent used modern temporary methods.

The first distinct feature regarding the determinants of contraceptive-choice in Sri Lanka emerging for these results is that both demographic and socio-economic factors are important in distinguishing those practising contraception from those not practising contraception. In looking at only the first three columns of [table 3](#), a prominence of significant effects is observed for almost all of the independent variables. The results are mostly in the expected direction. Among demographic measures, there is a negative effect of short marriage durations for all methods and a positive effect of long marriage durations for sterilization and traditional methods. There is also a consistent and strong positive effect of the number of living children on contraceptive use of any type. Additionally, later marriage seems to discourage the use of efficient methods. This may be due to a greater sense of reproductive urgency among women who marry later.

The socio-economic effects on method choice versus non-use are also along predicted lines. Sinhalese (the reference group) are more likely to practise contraception than any other ethnic group. The use and non-use differentials, however, vary by method. Although all the other ethnic groups are less likely to use traditional methods when compared with the Sinhalese, the Moors (or Muslims) are distinguishable for favouring non-use as opposed to *any* method choice, particularly sterilization. The Indian Tamils, on the other hand, favour non-use over only temporary and traditional methods ([see table](#)). It also can be observed that, as would be expected, education increases contraceptive use but, interestingly, mostly for temporary (modern or traditional) methods. In contrast, urban residence is effective only in in-

Appendix: Parameter estimates for polytomous logistic model with current method use outcomes,
Sri Lanka, 1987

Variable	Modern temporary versus non-users	Sterilization versus non-users	Traditional versus non-users	Modern temporary versus traditional	Sterilization versus traditional	Modern temporary versus sterilization
Constant	-0.728*	-1.371***	-1.715***	0.987	0.344	-0.643
Marital duration						
< 5 years	-0.980***	-3.491***	-1.069***	0.088	-2.421***	2.510***
5 - 14 years#	0.356	1.929**	0.569**	-0.212	1.360***	-1.573***
15 + years	-0.080***	-0.046***	0.008	-0.089*	-0.054**	-0.034**
Age at marriage	0.429***	0.858***	0.331***	0.098	0.527***	-0.429***
No. of living children						
Place of residence						
Urban	0.163	0.372**	0.175	-0.012	0.197	-0.208
Rural #						
Ethnicity						
Sinhalese #						
Sri Lankan Tamil	-0.554	-0.380	-1.149**	0.594	0.769*	-0.175
Indian Tamil	-1.050**	0.051	-0.987***	-0.062	1.038***	-1.100**
Moor	-0.616*	-0.816***	-0.616**	0.000	-0.200	0.200
Other	0.037	-0.720	-1.224*	1.261*	0.504	0.757

Appendix: (continued)

Variable	Modern temporary versus non-users	Sterilization versus non-users	Traditional versus non-users	Modern temporary versus traditional	Sterilization versus traditional	Modern temporary versus sterilization
Wife's education						
None	-0.551 *	-0.228	-0.438 **	-0.113	0.209	-0.322
1 - 5 years#	0.428 **	0.059	0.351 **	0.077	-0.292 **	0.369 **
6 - 9 years	0.695 ***	-0.059	0.623 ***	0.073	-0.682 ***	0.753 ***
10 + years						
Husband's education						
None	-0.137	0.076	-0.097	-0.040	0.173	-0.213
1 - 5 years#	0.357 **	0.262 **	0.264 **	0.093	-0.002	0.095
6 - 9 years	0.415 **	-0.065	0.387 **	0.028	-0.452 **	0.480 **
10 + years						
Interaction						
No. of children and marital duration:						
<5 years	0.857 ***	1.066 ***	0.537 ***	0.319 *	0.529	-0.210
15+ years	-0.434 ***	-0.696 ***	-0.251	-0.183 *	0.445 ***	0.262 **

Notes: Weighted regression with currently married women 15-49 years;
Omitted category
* P<0.05; ** P<0.01; *** P<0.001.

creasing the likelihood of sterilization. It is rather surprising that the contraceptive practices of urban women are not distinguishable from those of rural women in any other respect.

The second remarkable feature of the results in [table 3](#) is the lack of any major distinction between the users of modern temporary and traditional methods. This is clear from the relative absence of significant effects in column four. Other than the fact that late marrying women favour traditional methods and Moors favour modern ones, the users of the two temporary contraceptive choices are undistinguishable. Since temporary methods are most likely to be used for spacing purposes, this suggests that method efficiency is perhaps not a major concern in spacing behaviour.

That the contraceptive choice of Sri Lankans is motivated largely by the overarching family life-cycle goals of either termination or spacing, rather than by specific concerns within these goals, is also apparent in the mirror effects observed in columns five and six, where both temporary methods are contrasted with sterilization. Clearly, the issue at hand for Sri Lankans seems to be sterilization versus *either* traditional or modern contraception. That this choice is driven to a large extent by the couple's stage in the family life-cycle is also apparent from the strong effects of the demographic factors in these two columns. Couples with longer marital durations and larger numbers of living children are more likely to practise sterilization than either of the two temporary methods. The only non-mirror effect is for age at marriage: women who marry later are more likely to prefer traditional methods to sterilization, but are also more likely to prefer sterilization to modern temporary methods. Actually this effect may also be reflective of family-building goals. Although we have not tested for it, age at marriage may be interacting with parity. That is, while late marrying women may be doing some reproductive "catching up" at lower parities, and thus preferring traditional contraception to sterilization, at higher parities they may be showing their otherwise modern outlook by definitively finishing family building through sterilization.

The relative importance of demographic as opposed to socio-economic variables in our model is visually apparent from the prominence and strength of significant effects among the former, particularly in columns five and six. More rigorously, however, the same thing can be determined from the Model Chi Square values of models estimated both with and without each set of variables. The Model Chi Square value for the addition of demographic variables to a model containing only socio-economic variables is 1,480.8 with 18 degrees of freedom, indicating a vast improvement in the

model fit. On the other hand, the Model Chi Square value for the addition of socio-economic variables to a model containing only demographic variables is only 313.7 with 33 degrees of freedom; although still a significant improvement in the model fit, this contribution is obviously smaller than that of the demographic variables.

In looking at columns five and six, therefore, it can be seen that although family life-cycle goals are the prime differentiating factors in contraceptive method choice, there are some differentials by social position as well. The education effect points towards better educated women favouring temporary methods to sterilization. The greater likelihood of sterilization among Tamils, particularly Indian Tamils, can also be seen. Both of these effects may actually be less representative of personal choice if government programme efforts for sterilization are selective by education or ethnicity.

Overall, the model also shows significant parity-marital duration interactions, indicating that the effect of parity on a couple's decision to use contraception (and the type) is dependent on marital duration. This can be seen more clearly in table 4, where the effects of parity on method choice are presented as conditional upon marital duration. At shorter marriage durations (fewer than five years), women with more children are considerably more likely to use a contraceptive method, and especially an efficient one. At longer durations (15+ years), the effect of parity is largely negligible, except for the choice of sterilization over traditional methods. Presumably, if a couple's family-size goals have already been achieved at longer durations, parity levels are less material.

Table 4: Effect of number of living children on method choice conditional on marriage duration*

Marriage duration (years)	Modern temporary versus non-users	Sterilization versus non-users	Traditional versus non-users	Modern temporary versus traditional	Sterilization versus traditional	Modern temporary versus sterilization
<5	1.286	1.924	.868	.417	1.056	-.639
5 - 14	.429	.858	.331	.098	.527	-.429
15 +	-.005	.162	.080	-.085	.927	-.167

*Note: Calculated at the partial derivative of the regression equation (Kahn, Thapa and Gaminiratne, 1989). This partial derivative is evaluated for each category of marital duration in table 5.

The overall findings in tables 3 and 4 can be seen more comprehensively by examining the predicted probabilities of method choice, derived from the regression equation and shown in table 5. The predicted probabilities for each choice are calculated by evaluating the regression equation

Table 5: Predicted probabilities of current method choice, Sri Lanka, 1987*

Variable	Modern temporary	Sterilization	Traditional	Non-use
Age at marriage				
18	0.13	0.23	0.22	0.42
24	0.09	0.19	0.26	0.47
Marital duration <5 years				
No. of living children:				
0	0.03	0.00	0.07	0.90
3	0.33	0.17	0.26	0.24
Marital duration 15 + years				
No. of living children:				
0	0.09	0.21	0.22	0.49
3	0.07	0.28	0.23	0.41
6	0.06	0.37	0.24	0.45
Place of residence				
Urban	0.11	0.25	0.24	0.39
Rural	0.11	0.20	0.24	0.45
Ethnicity				
Sinhalese	0.12	0.21	0.26	0.42
Sri Lankan Tamil	0.09	0.20	0.11	0.61
Indian Tamil	0.05	0.27	0.12	0.55
Moor	0.08	0.14	0.18	0.61
Other	0.15	0.14	0.10	0.61
Wife's education (years)				
None	0.08	0.20	0.19	0.53
1 - 5	0.09	0.23	0.20	0.48
6 - 9	0.13	0.20	0.27	0.40
10 +	0.15	0.17	0.32	0.37
Husband's education (years)				
None	0.10	0.23	0.22	0.45
1 - 5	0.09	0.21	0.21	0.48
6 - 9	0.12	0.22	0.25	0.40
10 +	0.13	0.18	0.28	0.40
Total predicted	0.11	0.21	0.24	0.44
Observed	0.11	0.30	0.21	0.38

*Note: Calculated by evaluating the regression equation for each value of the variable of interest (e.g. urban, rural), holding all other variables in the model constant at their means. Predicted log-odds are then transformed back into probabilities.

for different values of the independent variables, holding all other variables constant at their means. For each specification of the independent variable, the values of the predicted probabilities across the four choices in the dependent variable add up to 1.00.

Here it can be observed more summarily that women marrying later have a somewhat higher probability of non-use and traditional method use, and somewhat lower probability of modern method (temporary or permanent) use. We have suggested that this may be due to great reproductive urgency among these women, particularly at lower parities. Next, higher probabilities of any method use can be observed among couples with short marriage durations and higher parities, but only a greater probability of practicing sterilization among couples with longer marriage durations and high parities. These predicted probabilities are consistent with normally expected family life-cycle goals. Among the socio-economic variables, we observe the differentials mostly by ethnicity and education (the wife's more so than the husband's). The only difference among urban and rural residents is the higher probability of sterilization among the former. On the other hand, it can be seen that Indian Tamils have the lowest probability of modern temporary method use, but the highest probability of sterilization. Sinhalese are also distinguishable for a higher probability of using traditional methods. There are also reasonably strong differences by education: it depresses the likelihood of sterilization, but increases the likelihood of temporary method use.

Conclusion

The determinants of contraceptive method choice in Sri Lanka in 1987 seem to be characterized by three major features. First, both demographic and socio-economic factors are important in distinguishing users from non-users: those who use some type of contraceptive method are not only motivated to do so by their family-building stage, but are also more likely to be urban, Sinhalese and better educated. Second, and a remarkable feature peculiar to Sri Lanka, there is an almost total lack of differentials among users of temporary modern and traditional methods. This, in part, is related to the third feature, and that is the relative dependence of method choice on family life-cycle goals rather than on socio-cultural differentials: the use of sterilization is closely associated with the goal of terminating child-bearing, while temporary methods of either type (modern or traditional) are being used for child-spacing.

The consistency of these results with those found in the earlier study using 1975 and 1982 data is remarkable. Even though the surveys cannot be considered to be strictly comparable owing to the issue of sample design, the stability of what determines method choice in Sri Lanka in both the current and previous studies is both striking and noteworthy. The fact that the determinants have changed but little over time also tells us, however, that (a) the choice of birth-spacing methods has not become more pronounced over time; if anything, the use of sterilization has increased, and (b) demographic factors continue to have the dominant effect on method choice, over socio-economic factors. The data also suggest that government programmes have not yet achieved success in promoting the use of modern temporary methods, which has shifted little from the plateau of about 10 per cent since 1975.

Overall, the data analyzed in this article show that contraceptive use continued to rise, albeit at a slower rate, in the 1980s in Sri Lanka. However, this has occurred without necessarily any structural changes in the patterns of contraceptive use. It appears that the relatively small role played by the modern methods of contraception in Sri Lanka is not likely to easily shift.

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