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Multimorbidity and consultation time: a systematic review

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MULTIMORBIDITY AND CONSULTATION TIME: A SYSTEMATIC REVIEW

MULTIMORBILIDADE E TEMPO DE CONSULTA: UMA REVISÃO SISTEMÀTICA

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ABSTRACT

Background: Multimorbidity (MM) is one of the major challenges currently facing health systems at the international level and tends to occupy a considerable part of the daily activity of physicians around the world. It is important to think about the medical approach to dealing with patients with multimorbidity in order to maximize the quality of the services provided by national health services, and thus to secure a better quality of life for these patients. Information about the time spent in a medical consultation with a patient with MM criteria is essential to better organize and deliver healthcare. As far as we know, no previous review has summarized the data relating to how having MM affects the length of the average consultation time.

Objective: To review all the experimental observational studies that describe the impact of having MM on the average time of a medical consultation.

Methods: This systematic review was performed considering the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) guidelines for systematic reviews and meta-analysis. The systematic online searches of the Embase and PubMed databases were undertaken, from January 2000 to August 2018. The studies were independently screened by two reviewers to decide which ones met the inclusion criteria. (Kappa=0.84 and Kappa=0.82). Differing opinions were solved by a third person. This systematic review included people with MM criteria as participants (two or more chronic conditions in the same individual). The type of outcome included was explicitly defined – the length of medical appointments with patients with MM criteria. Any strategies aiming to analyse the impact of MM on the average consultation time were considered. The comparator used was the length of time of medical appointment for patients without MM criteria. Experimental and observational studies were included.

Results: Of 85 articles identified, only 1 observational study was included. The study shows that there is a clear trend for patients with MM criteria to have longer consultations than patients without MM criteria (p<0.001). The global quality of this study was considered "Satisfactory".

Conclusions: It is imperative to study the consultation time spent on patients with MM criteria. Finding a longer consultation time indicates it is important to rethink and adapt GPs' lists and time planning to be able to give better medical care to patients with MM by providing agendas that have specific times set aside for these patients and allocating enough time for every task required.

Keywords: Multimorbidity; Medical appointment; Quality of healthcare; Consultation time; Systematic review; Accessibility.

RESUMO

Introdução: A multimorbilidade (MM) é atualmente um dos principais desafios enfrentados pelos sistemas de saúde a nível internacional e tende a ocupar uma parte considerável da atividade diária dos médicos em todo o mundo. É importante pensar na abordagem médica para lidar com pacientes com MM, a fim de maximizar a qualidade dos serviços prestados pelos serviços nacionais de saúde e, assim, garantir uma melhor qualidade de vida para esses pacientes. Informações sobre o tempo gasto numa consulta médica com pacientes com critérios de MM são essenciais para melhor organizar e fornecer cuidados de saúde. Até onde sabemos, nenhuma revisão anterior resumiu os dados relativos ao impacto da MM na duração média do tempo de consulta.

Objetivo: Revisão de todos os estudos experimentais e observacionais que descrevem o impacto de ter MM na duração média de uma consulta médica.

Métodos: Esta revisão sistemática foi realizada considerando as diretrizes de Itens Preferenciais de Relatórios para Revisão Sistemática e Meta-análises (PRISMA) para revisões sistemáticas e meta-análises. As pesquisas bibliográficas foram realizadas utilizando as bases de dados Embase e PubMed, desde janeiro de 2000 até agosto de 2018. Os estudos foram selecionados de forma independente por dois investigadores, a fim de selecionar aqueles que cumpriam os critérios de inclusão. (Kappa=0.84 e Kappa=0.82). Opiniões divergentes foram resolvidas por uma terceira pessoa. Esta revisão sistemática incluiu como participantes pacientes com critérios de MM (duas ou mais condições crónicas no mesmo indivíduo). Os artigos selecionados incluíam explicitamente a duração das consultas médicas com pacientes com MM. Quaisquer estratégias que visassem analisar o impacto da MM na duração média do tempo de consulta foram consideradas. Como referência foi considerado o tempo gasto na consulta médica com pacientes sem MM. Foram incluídos tanto estudos experimentais como observacionais.

Resultados: Dos 85 artigos identificados, só 1 estudo observacional foi selecionado. O estudo mostra que há uma tendência clara para pacientes com MM necessitarem de consultas mais longas do que aqueles sem MM ($p<0,001$). A qualidade do artigo foi considerada “Satisfatória”.

Conclusão: É imperativo estudar o tempo de consulta com pacientes com MM. Encontrar um tempo maior de consulta indica que é importante repensar e adaptar as listas dos médicos e o planeamento do tempo para poder prestar melhor assistência médica aos pacientes com MM, permitindo que os planos de consulta tenham horários específicos dedicados a esses pacientes e tempo suficiente para todas as tarefas necessárias.

Palavras-chave: Multimorbilidade; Consulta médica; Qualidade dos cuidados de saúde; Tempo de consulta; Revisão sistemática; Acessibilidade.

1. INTRODUCTION

Multimorbidity (MM) is defined by the European General Practice Research Network as "any combination of chronic disease with at least one other disease (acute or chronic) or biopsychosocial factor (associated or not) or somatic risk factor".[1] This is sometimes simplified to, "the simultaneous occurrence of two or more chronic diseases in the same individual".[2] MM is now one of the main challenges faced by health systems at an international level and occupies a considerable part of the daily activity of GPs around the world.[3-6]

With an ageing world population, multimorbidity and its consequences are becoming a major issue in public health and primary care. According to data from the United Nations,[7,8] Europe has the largest percentage of population aged 60 or over (25%).[7] In 2015 the number of people in the world aged 60 years and older was 901 million.[8] It is projected that in 2030 this figure will rise to 1.4 billion (a 56% increase since 2015) and stand at 2.1 billion in 2050.[8] Several studies have shown that there is a very significant association between age[2] and the prevalence of multimorbidity, the point being that national health systems are neither prepared for nor able to cope with this rapid ageing.[5,6]

Faced with this problem, which is increasingly relevant in today's societies, it is imperative to think about the approach to be used in patients with multimorbidity in order to maximize the quality of services provided by the National Health Service (NHS), and consequently guarantee a better quality of life for these patients.

A medical team faces various difficulties in caring for a multimorbidity patient. These include: lack of resources; consultation time restrictions; interdisciplinary care/teams; inadequate patient support (largely reliant on community-based support services); inadequate tools (guidelines drawn up strictly for specific diseases); the attitude of the patient (often discouraged and poorly engaged).[4,9]

Information about the time spent in a consultation with a patient with MM criteria is essential to better organize and deliver healthcare. As far as we know, no previous review has summarized the data relating to the problem in question: What is the impact of having MM on the medical consultation? Is the average consultation time spent on a patient with an MM criterion longer than for a patient without an MM criterion?

We have therefore carried out a systematic review of all the experimental and observational studies that describe the impact of having MM on the average time of a medical consultation.

2. METHODS

This systematic review was performed considering the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) guidelines for systematic reviews and meta-analysis (Appendix 1 – PRISMA 2009 Checklist).

2.1 Eligibility criteria

This systematic review included as participants people with MM criteria. The most widely used definition of MM was used, which is the coexistence of two or more chronic conditions in the same individual.[2] The World Health Organization (WHO) definition of chronic disease was adopted, namely, “health problems that require ongoing management over a period of years or decades”.[10]

The type of outcome included was explicitly defined – the length of medical appointments with patients with MM criteria. Any strategies aiming to analyse the impact of MM on the average consultation time were considered. Studies which did not specify the time spent on medical appointments were excluded from this analysis.

The comparator used was the length of medical appointments with patients without MM criteria.

Experimental and observational studies were included.

2.2 Information sources and search strategy

The systematic online searches were undertaken using combinations of keywords in the following electronic databases: the Embase and PubMed databases, from 1st January 2000 until the 31st August 2018 to find pertinent studies.

The search within the Embase database used the following combination of keywords: ('multiple chronic conditions'/exp OR 'multiple chronic conditions') AND ('consultation time' OR (('consultation'/exp OR consultation) AND ('time'/exp OR time))); ('multiple chronic conditions'/exp OR 'multiple chronic conditions') AND ('primary health care'/exp OR 'primary health care') AND ('time'/exp OR time); 'consultation'/exp AND 'multiple chronic conditions'/exp/mj; 'multiple chronic conditions'/exp AND ('time'/exp OR 'average'/exp OR 'consultation'/exp). For PubMed the combinations were: "Chronic

Disease/epidemiology"[Mesh] AND (("referral and consultation"[MeSH Terms] OR ("referral"[All Fields] AND "consultation"[All Fields]) OR "referral and consultation"[All Fields] OR "consultation"[All Fields]) AND ("time"[MeSH Terms] OR "time"[All Fields])).

The search was limited to papers in English, Portuguese, Spanish and French. No other limits were imposed during this stage of the study.

2.3 Data extraction and quality assessment

The potentially relevant studies were selected in two stages. First, the titles and abstracts quoted in the literature search were independently screened by two reviewers (CT and IF) to decide which ones met the inclusion criteria (Kappa=0.84). Those not meeting the inclusion criteria were excluded. Differing opinions on study inclusion were resolved by a third person (IR).

Secondly, the researchers independently read and analysed the integrity of the matching studies and tried to reach an agreement concerning eligibility (Kappa=0.82). Those not meeting the inclusion criteria were excluded. Differing opinions on study inclusion were resolved by a third person (IR). We assessed the quality and risk of bias of the included studies using the Newcastle-Ottawa Scale (NOS), more precisely, the Newcastle-Ottawa scale adapted for cross-sectional studies.[11] This tool assesses three aspects of a study: the selection of the sample; the comparability of the groups; and the outcome (assessment of outcome and statistical test). It is composed of 7 items and classifies the study in 4 possible levels: Very good (9-10 points), Good (7-8 points), Satisfactory (5-6 points) and Unsatisfactory (0-4 points). Any disagreement was resolved through consensus.

This systematic review was conducted using Covidence 13, the standard production platform used for Cochrane reviews, which was used for the data and records management.

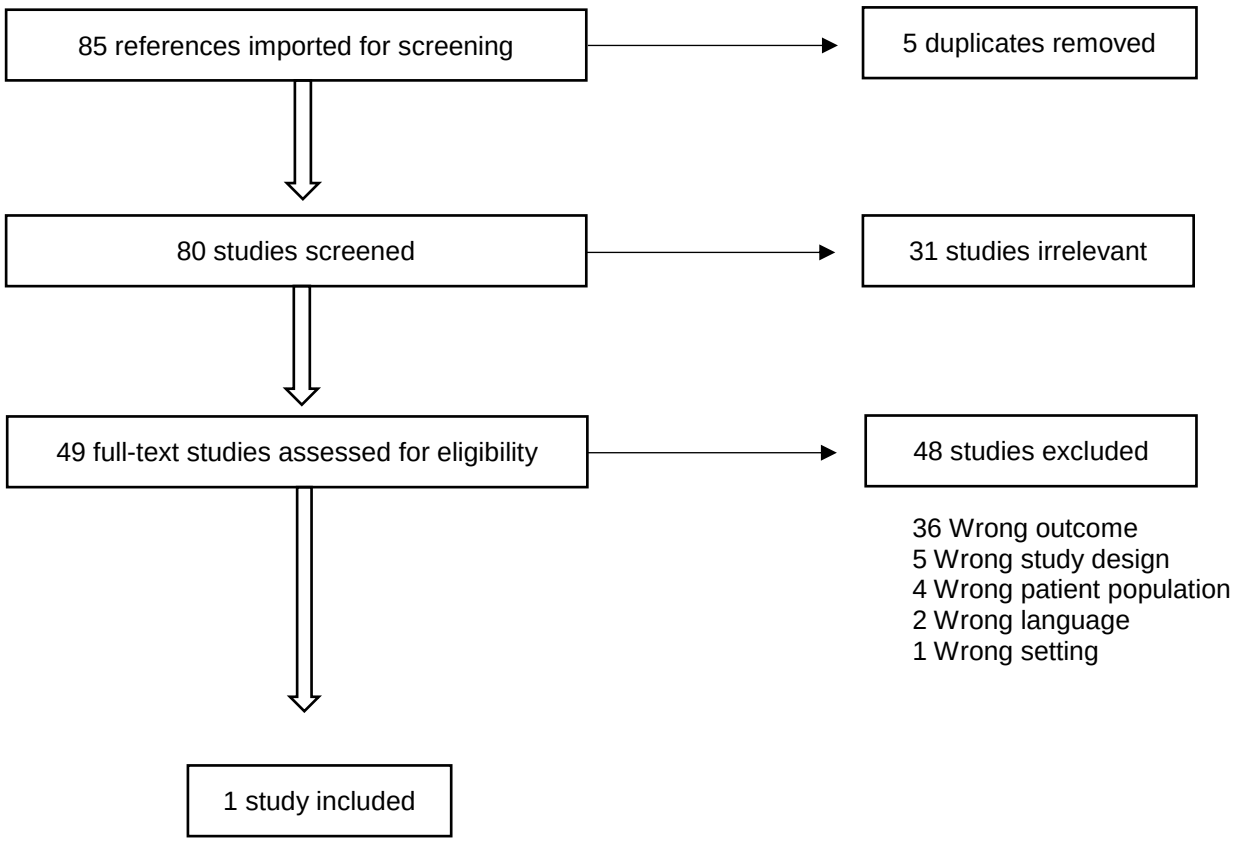
2.4 Outcomes and statistical analysis

The patients were split into two groups, those with and those without MM, and the relative frequencies calculated. The results were analysed using the chi-square distribution test.

3. RESULTS

3.1 Study selection

As described in **Flowchart 1**, the electronic database searches started out with 85 potentially eligible references (26 in PubMed and 59 in Embase). Of these, 5 were duplicates and were thus excluded and 31 were considered irrelevant based on a review of the title and abstract. The rest of the studies were read in full, analysed and assessed for eligibility, and 36 were excluded due to wrong outcome,[3,12-46] 5 to wrong study design,[47-51] 4 to wrong patient population,[9,52-54] 2 to wrong language[55-56] and 1 to wrong setting.[57] In the end, 1 study was included.[58]



Flowchart 1 – Literature search and selection process for studies included.

3.2 Study characteristics and quality

The main relevant features and outputs of the study were extracted for the purpose of this systematic review and are summed up in **Table I**.

The study included was conducted between 2008 and 2009 in Denmark, over 12 months. It involved 404 general practitioners (GPs) participants and a total of 8236 contacts. It included patients aged 40 years or more and patients were grouped into those without any chronic condition and those with one, two, three or more chronic conditions.

During the study period, the GPs completed a one-page registration form for each of their patient contacts. Of the various items that were registered, the ones relevant for our review were information on chronic disease and length of consultation time.
The result of the quality assessment, performed as described in Section 2 (Methods), is presented in **Table II**. The quality of the study was considered satisfactory (score 6 out of a maximum score of 10). The main weakness was in the comparability section.

Table I – Summary of study's characteristics.

Author	Year of study	Country	Design	Number of participants	Population (inclusion criteria)	Setting	Method of data collection	Outcomes measured	Author's conclusions
Moth *et al.*	2008-2009	Denmark	Cross-sectional	404 GPs, 8236 contacts	Persons aged 40 years or more	General practice	Registration form completed by GP about all patient contacts on one randomly assigned date during the study period.	- Length of consultation time, chronic disease, reason for appointment, diagnosis, number of additional psychosocial problems raised by the patient during the consultation, difficulty found with consultation of the consultation, referral to specialized care, and whether a nurse could have replaced the GP.	- GPs found consultations with patients suffering from chronic conditions to be more difficult than those with patients without chronic disease (p<0.001).

GPs – General Practitioners.

Table II – Quality of study - Newcastle-Ottawa Scale adapted for cross-sectional studies.

Author	Selection				Comparability	Outcome		Total score	Power
	Representativeness of the sample	Sample size	Non-respondents	Ascertainment of exposure (risk factor)	Comparability of subjects in different outcome groups on the basis of design or analysis.	Assessment of outcome	Statistical test		
Moth *et al.*	*	- (b)	*	**	-	*	*	6*	Satisfactory

(b) – Calculation not reported.

3.3 Results of study

Table III shows the relationship between the length of consultation time and the type of patient (with and without MM criteria). There is a clear significant trend for patients with MM criteria to have longer consultations than patients without MM criteria ($p<0.001$).

As can be seen, more than 25% of the patients with MM criteria spend 16 minutes or more at a medical appointment while more than 75% of the patients without MM criteria spend 15 minutes or less at a consultation. It can also be seen that length of time most usually spent on both types of patients is between 6 and 15 minutes. There is a significant difference, however, in the percentage of patients with MM requiring more time than patients without MM criteria.

Table III – Length of consultation time and type of patient (with and without MM criteria).

Length of consultation time	W/o MM (n)	%	MM (n)	%	*p*-value
<5 min	293	11.7	96	7.7	
6-15 min	1686	67.3	804	64.9	
16-30 min	485	19.4	314	25.3	*p*<0.001
>30 min	42	1.7	25	2.0	
Total	2506	100	1239	100	

W/o – without. MM – Multimorbidity. Min – minutes.

4. DISCUSSION

The present systematic review sought to answer the following question: “Is the average consultation time spent on patients with MM longer than that spent on patients who do not meet the MM criteria?” Only one study was identified,[58] undertaken in Denmark, in which the consultation time was logged as a function of the number of chronic diseases. This study revealed a tendency for consultations to take longer for patients with MM than for those without. However, the study was not directly aimed at answering this question and it did not take confounding factors into account. In addition, it does not describe the calculation to determine the sample size of the study and it could be inaccurate to study this specific outcome. We can thus conclude that the global quality of this study to answer this specific question “Satisfactory”.

The small number of publications in the literature shows that more studies should be designed to investigate the impact of patients with MM on the consultation time. It is vital to analyse this issue in order to manage resources so that they meet the actual need, and to ensure the services provided by national health services are appropriate. It will thus be possible to guarantee better quality health services and outcomes for these patients.

It is extremely important, therefore, to conduct quality studies that evaluate this relationship. The study sample must be truly representative of the population under assessment (random sampling) and its size must be suitable (including sample size calculation). It is important that the methods used to measure the duration of a consultation do, in fact, represent the real duration of the consultation (i.e. from the moment that the doctor opens the patient’s file to the moment it is closed); using stopwatches and self-reporting will probably lead to inaccuracies. Furthermore, calculating the length of the consultation obtained by dividing the total time a medical practitioner is in the clinic by the number of patients could yield average times that mask the real duration of each patient’s consultation. Also, confounding factors might not be eliminated as the time spent on administrative work, breaks and work meetings might be included. Only direct observation using video recording has been proven to obtain accurate values when measuring the duration of consultations,[59] which could be a procedure that mitigates many of the errors previously mentioned. The length of a consultation must be measured accurately to avoid errors and skewed judgements. It is essential to identify beforehand any possible confounding factors inherent to the patients (for example, hearing difficulty, education level, age, socio-economic level), inherent to the doctor (in particular, a change in behaviour due to the participation in the research study – Hawthorne effect[60]), and inherent to the

consultation/institution (for example, glitches in computer systems, coding errors, telephone call interruptions).

The data analysis must be evaluated using objective validated laboratory methods and, if possible, it should be a blind assessment. Statistical tests used to analyse the data must be appropriate and clearly described. Measures of association, including confidence intervals and the P value, must be presented.

5. LIMITATIONS

The main limitation of this systematic review was the difficulty in ensuring that all the relevant literature was included. Even though the research used two of the main databases – Pubmed and Embase – there could be other relevant material in grey literature.

The scarcity of the literature that was found was a limitation for this review. The one publication found, besides not directly answering our question, also does not take confounding factors into account, and does not describe the calculation to determine the sample size of the study. However, it does highlight the relevance of the subject matter.

6. CONCLUSIONS

This systematic review has shown how the “impact of MM on the duration of a consultation” has hardly been studied. Even though it found that there is a tendency for consultations with patients with MM to take longer than those without, only 1 study with “satisfactory” quality was found, so more research is still needed to acquire more evaluation data that may well yield more evidence for this tendency and enable a proper quantification of the time and associated costs.

If a longer consultation time is confirmed, it will be important to rethink and adapt GPs’ lists to be able to give better medical care to patients with MM by providing agendas that have specific times set aside for these patients, and allocating enough time for all the required tasks.

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APPENDIX 1 - PRISMA 2009 Checklist MULTIMORBIDITY AND CONSULTATION TIME: A SYSTEMATIC REVIEW

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Cover page
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	4-5
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	8
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	8
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Not applicable
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	9
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	9
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	9-10
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	10
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	10
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	10
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	10
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	10

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	10
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	Not applicable
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	11
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	12-13
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	12-13
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	14
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Not applicable
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	13
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	Not applicable
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	15-16
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	16
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	17
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	Not applicable

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