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Are we promoting boys and girls equally? An analysis of boys' and girls' participation in community prevention

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Abstract

Aim Despite consensus that prevention and health promotion need to address gender aspects and differences, not much is known about how boys and girls in infancy (or their parents) make use of existing non-medical community programmes. The aim of the study was therefore to analyse the extent to which boys and girls or their parents in distinct social circumstances participate in respective programmes.

Subject and methods We conducted secondary analyses for two study samples: The COLIPRE Study includes ($n=6,480$) pre-schoolers from Duesseldorf; the SKILLS Study includes ($n=637$) pre-schoolers and school children from Cologne. Social circumstances included parental education, employment status, family status, migration background, mother language and neighbourhood deprivation. Prevention participation included programmes for a healthy diet, physical activity, child education and language development. We used Poisson regressions to calculate prevalence ratios (PR) with 95% confidence interval (CI), adjusted for age, siblings and BMI, stratified for boys and girls.

Results In both studies, we observed no gender differences in general participation. Taking a range of social circumstances into account, we found that boys and girls with specific disadvantages were underrepresented in programmes to promote a healthy diet, physical activity and child education. By contrast, boys and girls with a migration background participate in language promotion programmes more often than their German-native peers.

Conclusion More effort should be put into developing programmes for boys and girls and their parents in difficult social circumstances.

Keywords Gender · Social inequalities · Community prevention · Health promotion

Introduction

Children's lives in Western societies have fundamentally changed over the past decades, and so have the predominant disorders and disabilities. The new 'childhood diseases' are chronic conditions, obesity, behavioural and developmental disorders, motor deficits, hyperactivity, depression and aggressiveness (Wolfe and McKee 2013; Schlack et al. 2008; Fegeler and Jäger-Roman 2013). These conditions are related to an increase in poor diet, physical inactivity and psychosocial stressors. This calls for further efforts to prevent ill health in this particularly vulnerable population.

Quality-assured prevention and health promotion (PHP) has been claimed to be a key to achieve this aim (Allegrante et al. 2012) and the legal framework, for instance in Germany, has been amended accordingly (Präventionsgesetz 2015). However, it is questionable if

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generic PHP programmes are appropriate because they often do not reach young people with the highest need, and their effects are limited because the specific situation of target groups is not properly addressed (needs, utilization habits, attitudes, knowledge). Gender is one important target group characteristic. There is growing consensus that PHP need to address gender aspects and differences in order to be effective (Östlin et al. 2006; Helfferich 2009; Kuhlmann and Kolip 2005; BZgA 2008; Butler 2013). Despite this, it is still unusual to address gender issues in common PHP with children as the target group. As a first step of quality assured community prevention and health promotion for children taking into account gender aspects, it should be examined whether boys and girls differ in their utilization behaviour.

However, not much is known about how boys and girls in infancy (or their parents) make use of existing PHP and the evidence is inconsistent. For instance, no gender differences were observed in the participation in preventive medical screening (Landeszentrum Gesundheit Nordrhein-Westfalen 2016; Rattay et al. 2014), dental prevention (Martin et al. 2012) and preventive child health examinations at the general practitioner (Søndergaard et al. 2008). In contrast, marked differences were observed for occupational therapy with more boys than girls participating (Weber et al. 2016). There is almost no evidence in the context of *non-medical* PHP while the community provides a range of programmes to support children in their development, such as nutrition counselling, programmes to promote physical activity at different life stages, or training of life competencies in children or their parents. In a previous pilot study of our working group, we observed that more girls than boys participated in baby and toddler groups, preventive offers of family centres and financial support in sport programmes (Weyers and Wahl 2015). Next, more girls than boys were exposed to early child care that might compensate for social disadvantages and prevents developmental delay (Weyers and Wahl 2015; von Görtz and Janssen 2014).

Given this lack of evidence, we aimed to analyse gender differences of participation in community PHP. Because a social category such as gender should be observed in combination with other social categories such as socioeconomic position and nationality, we applied an intersectional perspective (Lenz 2010). Based on secondary analyses of two samples of preschoolers, we analysed the extent to which boys and girls or their parents in distinct social circumstances participated in PHP. We sought to answer the following research questions: Which PHP do boys and girls or their parents participate in? How are social circumstances associated with participation in boys and girls or their parents?

Methods

Study design We conducted secondary analyses for two study samples. The COLIPRE Study (Wahl et al. 2018) includes ($n = 6,480$) pre-schoolers 2017 and 2018 from Duesseldorf with, amongst others, data of participation in a range of community prevention programmes. The SKILLS Study includes ($n = 637$) pre-schoolers, first and third graders from Cologne with data on physical activity (PA), nutrition and participation in prevention programmes in 2015.

Variables Apart from *gender* (male vs. female) we assessed and harmonized between both study populations the following variables to operationalize social circumstances: *Parental education* was classified according to CASMIN ('Comparative Analysis of Social Mobility in Industrial Nations') (Lechert et al. 2006) where the highest general education diploma is combined with the highest level of vocational training for each parent. For parents with different levels of education, the higher level was selected. Families with CASMIN classification 1a–1c were assigned low education and families above (2a–3b) as medium/high education. *Employment status*: If both parents were not working at the time of the survey, they were considered unemployed. The reference category included families with at least one parent working full-time or part-time. *Family status*: If the child lived with only one parent, it was classified as a single parent family with two-parent families as the reference category. *Migration background*: If at least one parent had not been born in Germany, then a migration background was assumed. Families in which both parents had been born in Germany served as the reference category. *Mother language*: Children with a foreign mother language were compared to children with German as mother language. *Neighbourhood deprivation* was defined by the socio-spatial degree of deprivation for children's residential addresses. Based on indicators such as unemployment and living space per person the local authorities had classified 166 social spaces into five neighbourhood types ranging from very low to very high (Landeshauptstadt Düsseldorf 2017). Children growing up in neighbourhoods with very high or high deprivation were compared to those from neighbourhoods with very low to medium deprivation.

Prevention participation In COLIPRE, participation in prevention programmes was assessed by standardized questionnaire (yes/no) and was grouped for the analyses: Counselling services or courses to promote a *healthy diet* in children; Courses to promote *physical activity* in babies and young children including swimming courses; Counselling services or courses to support parents in terms of *child education*; Courses or play groups to promote *language development* in children, including those that are not native speakers. In

SKILLS, participation in physical activity programmes was assessed unstandardized using open-answer questionnaires and was categorized for the analyses into: membership in sport clubs, general participation in physical activity (PA) programmes, (both yes/no) and the five most common activities for PA.

Data analyses First, we calculated the prevalences of participation in different prevention programmes in boys and girls or their parents separately. Chi-square tests were used to test significance of differences. To estimate the association of social circumstances and prevention participation of boys and girls, we used Poisson regressions with robust standard errors. Stratified for boys and girls, we calculated prevalence ratios (PR) with 95% confidence interval (CI) for parental education, employment status, family status, migration background, mother language and neighbourhood deprivation. We adjusted for age, siblings and BMI (Kromeyer-Hauschild

et al. 2015). Cases with incomplete variables were excluded. All analyses were conducted using Stata 14.

Results

Table 1 describes both study populations. There are 5436 children in COLIPRE with a comparable number of girls (48.3%) and boys (51.7%). The SKILLS sample consisted of 637 children, 47.7% boys and 52.3% girls.

Table 2 illustrates participation in prevention programmes separately for girls and boys or their parents. In COLIPRE, participation in physical activity courses was most common both in girls (74.1%) and boys (72.8%). This is followed by courses for child education and courses to promote language development. Courses for a healthy diet are the least participated in. Gender differences were only observed with regard to courses in child education with parents of boys

Table 1 Study populations

Variable	Categories	COLIPRE		SKILLS	
		n or (mean)	% or (SD)	n or (mean)	% or (SD)
Gender	Male	2808	51.7	304	47.7
	Female	2628	48.3	333	52.3
Age		(5.9)	(0.3)	(6.8)	(1.7)
Parental education	Low	512	9.4	66	19.0
	Medium/high	4924	90.6	282	81.0
Employment status	Both parents not employed	332	6.1	37	10.4
	At least one parent in employment	5104	93.9	318	89.6
Family status	Single parents	679	12.5	53	15.0
	Two-parent families	4757	87.5	300	85.0
Migration background	Yes	2659	48.9	161	44.1
	No	2777	51.1	204	55.9
Mother language	Foreign	1747	32.1	152	42.0
	German	3689	67.9	210	58.0
Neighbourhood deprivation	Yes	1331	24.5	359	56.4
	No	4105	75.5	278	43.6
Body mass index		(15.76)	(1.75)	(16.5)	(2.3)
Siblings	Yes	4212	77.5	353	55.9
	no	1224	22.5	278	44.1
Total		5436	100.0	637	100.0

Table 2 Prevention participation in girls and boys, COLIPRE

Programme	Girls		Boys		Total		p
	n	%	n	%	n	%	
Healthy diet	228	8.7	237	8.4	465	8.6	.756
Physical activity	1948	74.1	2044	72.8	3992	73.4	.266
Child education	649	24.7	811	28.9	1460	26.9	.001
Language	685	26.1	772	27.5	1457	26.8	.235

participating more often than parents of girls (28.9% vs. 24.7%; $p=0.001$).

In SKILLS, we observed no gender differences regarding membership in sport clubs (girls 57.5%, boys 58.3%) and regarding general participation in physical activity (girls 44.1%, boys 42.0%) (Table 3).

Girls and boys participated in comparable sports, with cycling and swimming being the most popular (Table 4). Third place were different sports such as dancing in girls and football in boys. Gymnastics was the fourth most popular among girls and boys, followed by martial arts in boys and outdoor play in girls.

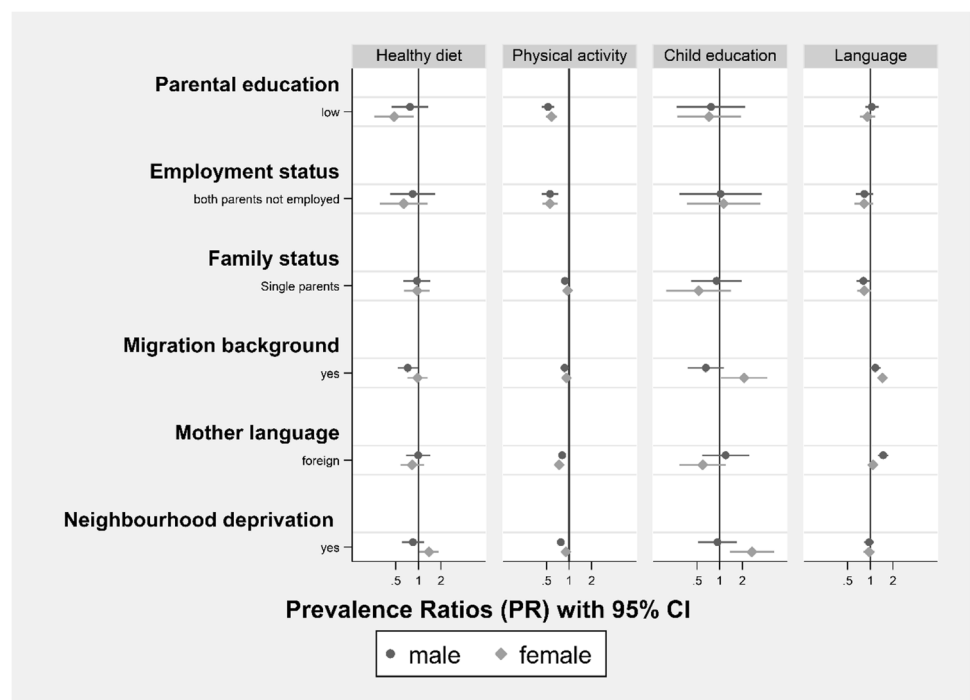
Table 3 Prevention participation in girls and boys, SKILLS

	Girls		Boys		Total		p
	n	%	n	%	n	%	
Club membership ($n=276$)	77	57.5	84	59.2	161	58.3	.777
Participation in physical activity ($n=637$)	134	44.1	140	42.0	274	43.0	.605

Table 4 Most common activities for physical activity, SKILLS

Girls			Boys			p
	n	%		n	%	
Cycling	64	21.1	Cycling	65	19.5	.631
Swimming	75	24.7	Swimming	63	18.9	.078
Dancing	44	14.5	Football	45	13.5	–
Gymnastics	40	13.2	Gymnastics	26	7.8	.027
Outdoor play	20	6.6	Martial arts	23	6.9	–

Fig. 1 Prevention participation by social circumstances, boys and girls separately, prevalence ratios with 95% confidence interval, COLIPRE, adjusted for age, siblings and BMI



we observed that low parental education (PR 0.526, CI 0.434–0.639; PR 0.585, CI 0.493–0.694), unemployment (PR 0.561, CI 0.437–0.721; PR 0.556, CI 0.441–0.700), migration background (PR 0.873, CI 0.829–0.919; PR 0.927, CI 0.884–0.972), foreign mother language (PR 0.813, CI 0.754–0.877; PR 0.737, CI 0.683–0.794) and neighbourhood deprivation (PR 0.780, CI 0.720–0.844; PR 0.911, CI 0.852–0.974) decreased the risk of participation compared to the reference groups of boys and girls. Single parenthood was a predictor in boys only (PR 0.883, CI 0.811–0.961). *Child education*: Only in girls from deprived neighbourhoods was the probability of participation increased (PR 2.698, CI 1.370–5.312). *Language*: Boys from single parent families had a decreased probability of participation (PR 0.813, CI 0.661–0.999), whereas girls with migration background (PR 1.458, CI 1.243–1.711) and boys with foreign mother language (PR 1.487, CI 1.268–1.744) had an increased probability.

Figure 2 shows the association of social circumstances and prevention participation for the SKILLS boys and girls separately. *Club membership*: The probability of sports club membership was decreased in girls from single-parent families (PR 0.420, CI 0.189–0.936). For boys, there was no association with any of the variables. *General participation in physical activity*: Boys with unemployed parents (PR 0.546, CI 0.306–0.973) and girls with migration background (PR 0.644, CI 0.513–0.809) participated less often in physical activity compared to their reference groups.

Discussion

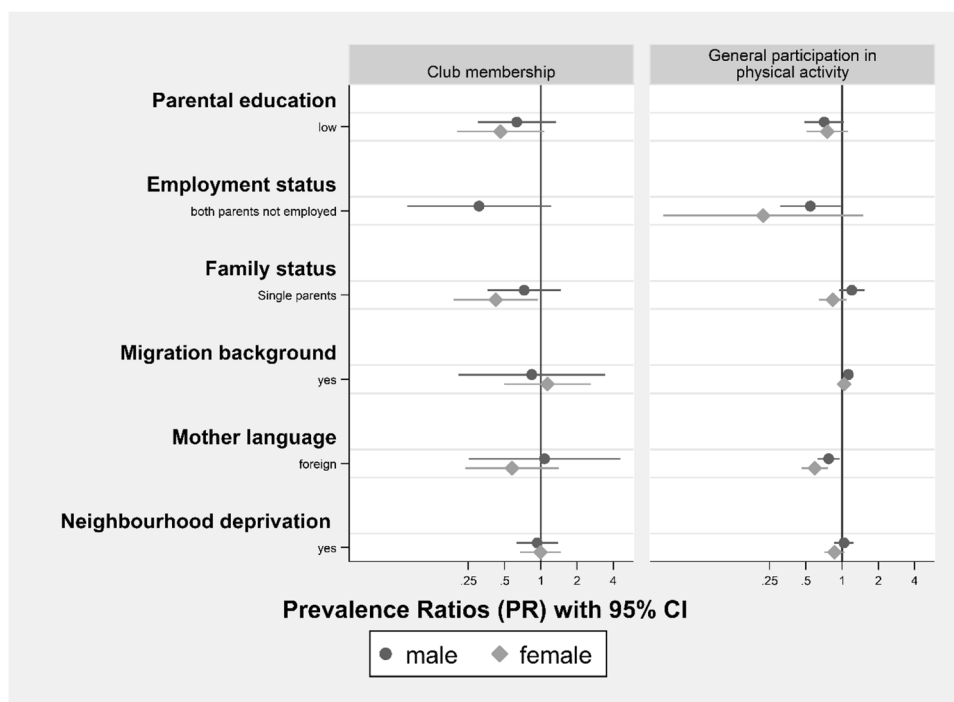
The aim of this study was to analyse differences of participation in community prevention programmes for boys and girls or their parents. Specifically, we wanted to address the following questions.

Which PHP do boys and girls or their parents participate in?

Our results show that both boys and girls or their parents most often participated in programmes to promote physical activity and they did so to a comparable extent. In both studies, we observed no gender differences in general participation in activities, and in SKILLS, we found no gender differences in sports club membership. Boys and girls practiced sports in comparable categories such as cycling and rolling, swimming and gymnastics. Then, however, we observed different preferences such as football and martial arts in boys and dancing and outdoor play in girls. Boys and girls or their parents participated less often in programmes for a healthy diet, equally with no gender differences. In the midfield, there were programmes to promote language development with no gender differences and programmes for child education, where boys or their parents participated more often than girls. To summarize, gender differences in participation were observed to a very limited extent. How does that fit into the existing literature?

Physical activity There is evidence that gender differences in sports participation are limited. Sport is

Fig. 2 Prevention participation by social circumstances, boys and girls separately, prevalence ratios with 95% confidence interval, SKILLS, adjusted for age, siblings and BMI (club membership: no cases in girls' category "employment status")



important both for boys and girls. Sport practices such as cycling are not more gender-specific (Rose 2003) – as it was in our study. There are, however, gender-specific sport practices as we also found in our study. This could be explained by the fact that sport is still a stage for construction of masculinity and femininity. Outside of school sports gender segregation is frequent and competitive sport distinguishes by programmes for boys and girls (Neuber 2020). These structural conditions go along with gender role stereotypes of boys and girls about *typically male* and *typically female* sports. Girls traditionally practice sport that is labelled female such as gymnastics, dancing, riding, but they have caught up with male sport such as football. Whereas boys focus on ball sport and martial arts (Giess-Stueber et al. 2008). These processes of dichotomy and reproduction of gender in sport are well researched (for an overview see Hartmann-Tews et al. 2003). However, there is the risk to generalize differences in girls and boys and to oversee differences within gender groups (ibidem). This issue is addressed with the second research question.

Child education The higher participation in programmes by boys or their parents corresponds to existing evidence reported above that boys more often participate in occupational therapy as intervention for behavioural problems (Weber et al. 2016). Also, studies show that boys are more often affected by behavioural problems and hyperactivity (Hölling et al. 2007). So it comes as no surprise that their parents participate in counselling and child education classes. These, however, are not the only options. Ziereis and Jansen (2015) showed that physical activity has a positive impact on hyperactive children. Insofar one could argue that more physical activity in boys as compared to girls would be reasonable.

Language That we observed no gender differences in participation in programmes to promote language development corresponds to the finding that gender differences in childhood language and brain development are not consistent or large. In their systematic literature review, Etchell et al. (2018) concluded that gender differences may be more prominent during certain developmental stages and negligible in others and that they often interact with a variety of factors. The interaction with the socioeconomic status (SES) was examined by Barbu et al. (2015) who found gender differences over the preschool years in low-SES children, but not between high-SES boys and girls. In their study, low-SES boys' performances were the poorest which, again, points to the relevance of an intersectional perspective.

How are social circumstances associated with participation in boys and girls or their parents?

Healthy diet While no general gender differences were observed in our sample, it seems that boys with migration background and girls with low parental education are underrepresented in programmes. In other studies, it has been shown that mothers of boys more often underestimate their child's weight status (Manios et al. 2009). Also, cultural factors play an important role in the body image and nutritional status of children (Gualdi-Russo et al. 2012). In some cultural groups, overweight and obesity are not perceived as a threat to health but are associated with good health, higher social status, fertility and prosperity (ibidem). It has been shown that mothers from Turkish or Moroccan origin underestimate the weight status of their child (de Hoog et al. 2012). So it seems that the underestimation of weight status especially concerns boys and children with migration background. In so far, our results are plausible. Since boys with migration background have higher rates of overweight and obesity than girls with migration background (Koschollek et al. 2019) there is a need for intervention.

Physical activity The strongest association of social circumstances with prevention utilization are found with regard to physical activity. In COLIPRE there are significant estimates in almost all indicators of social circumstances, both for boys and girls. In SKILLS the trend can be observed that boys and girls with disadvantaged socio-economic circumstances less often report club membership and general participation. This is consistent with the literature. Children growing up with social disadvantage less often participate in sport activities. More specifically, Brophy et al. (2011) have shown that in the UK children of less-affluent families and those living in deprived areas take part in organized activities less often, but they did not stratify by gender. Telama et al. (2009) found that participation in sport clubs was strongly associated with family socio-economic status for Finish boys and girls, but that the association was stronger in girls than boys. Our results suggest that economic barriers to participation in physical activity are stronger than socio-cultural barriers. Accordingly, parent surveys show that costs are a common reason for non-participation (Somerset and Hoare 2018). Also, a former cost analysis of our working group has calculated that physical activity programmes are not affordable for families with economic hardship (Weyers et al. 2020).

Child education Children with low social status and children with migration background have a higher risk of behavioural problems (Hölling et al. 2007). Thus, they or their parents should participate in respective programmes. In our study, however, only girls from deprived neighbourhoods and girls with migration background participated more often compared to their more affluent peers. The higher rate in participation could be explained by the intervention of local prevention managers. Those were implemented in neighbourhoods with special needs in the frame

of the North Rhine-Westphalian State programme ‘No child left behind’. (Brümmer et al. 2018). These managers were in close contact with families and transferred them to existing prevention offers. Obviously, boys or their parents were not recruited to the same extent which is a missed opportunity given boys’ higher risk of behavioural problems. In other words: Boys in disadvantaged social circumstances are undersupplied in terms of programmes to support child education.

Language Our results show that both boys and girls with some kind of migration background participate in language promotion programmes more often than their German-native peers. These can be very different programmes: In a setting approach, language promotion can be part of the quality development of day care centres with an above-average number of children with special needs (*Sprach-Kitas*; Bundesministerium für Familie, Senioren, Frauen und Jugend 2021). Daily language promotion is supported by an extra educator. Another approach focusses on parents with multilingual education programmes that are led by trained multilingual peers (*Rucksack*; Terhart and Winter 2017). Children who are not registered in a day care centre are obliged to undergo a language assessment and to participate in respective promotion programmes that are mediated by communities (*Delfin 4*). Sprach-Kitas were the most frequently named intervention in our sample.

Limitations

To our knowledge, this is the first study to examine gender differences in community prevention in boys and girls. We did so using two samples with measures of different social circumstances that were thoroughly harmonized. Another strength is that we analysed different areas of prevention with regard to child development. A central limitation is the retrospective design that might lead to recall bias and false estimations of prevention participation. Also, the small sample size in SKILLS allows for the observation of trends only.

Conclusions

While we observed no large gender differences in the participation in community prevention, we showed that boys and girls in specific social circumstances are underrepresented in some areas of prevention. This should be compensated with innovative and target group-specific programmes to ensure that all children have equal opportunities to grow up healthy and to prevent the new childhood diseases. Boys and girls should have the opportunity for free development and to try new things. Models of good practice are open community-based meeting places for girls and boys with low-threshold access and contact opportunities. In this protected space, children can actively organize their leisure time and experience social interaction. Activities range from sports and games to cooking and dinner with gender-homogeneous days as

an important element (Verbund sozialpädagogischer Projekte e.V. 2021). In addition, the affordability of community-based physical activity programmes for families with low income should be verified. Also, more effort should be put into developing programmes for healthy nutrition and child education for boys and their parents in difficult social circumstances.

Author contributions All authors contributed to the study conception and design. Material preparation and data collection were performed by Stefanie Lisak-Wahl, Katharina Kreffter, Stefanie Wessely and Christine Joisten, data analysis was performed by Thuy Ha Nguyen, Simon Götz and Stefanie Wessely. The first draft of the manuscript was written by Simone Weyers and Inken Fischer and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability Data and material are not available for third parties.

Code availability All analyses were conducted using Stata 14.

Declarations

Ethics approval The study was approved by the ethics committee of the Duesseldorf University Hospital (study nr. 5664).

Consent to participate All study participants gave informed consent to participation.

Consent for publication All study participants gave informed consent to scientific analysis and publication of study data.

Conflicts of interest/Competing interests The authors declare that they have no competing interest.

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