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Clinical Trials in the Republic of Serbia after 2020

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Abstract

A clinical trial as a prospective study comparing the effects and value of interventions against a control in human beings. Unlike animal studies, in clinical trials the researchers are not able to dictate what an individual should do. The researcher can only strongly encourage participants to avoid certain procedures or medications which might interfere with the trial. There are several ways of differentiating the clinical trials. In general, the division in phases of clinical trials is accepted at most. There are four phases of clinical trials.

Another way that the Clinical Trials are divided is in the type of study. There are two possibilities:

Interventional type of clinical trials – During these studies, the patients are receiving intervention, and the team of researchers is evaluating the outcome of the intervention. This usually occurs during phase 3 of a clinical trial.

Observational type of clinical trials – During these studies, the patients do not receive any intervention, they're just observed by clinical team for possible not reported Adverse Events. This usually occurs during phase 4 of a clinical trial.

During a Clinical trial the investigators teams are trying to find eligible patients for the study, so all the possible benefits that are indicated in the study protocol will be studied.

Key words: clinical Trials, clinical Studies, phases, types

Introduction

Traditionally, most trials of new interventions have collected extensive information about participants, have detailed inclusion and exclusion criteria, involved considerable quality assurance measures, and assessed many, carefully measured outcomes.

These sorts of trials, although they address major questions and are well-conducted, are quite expensive and often very time-consuming. Therefore, given the needed resources,

trial sponsors can afford to address only some of the many important questions can be answered, often in limited kinds of participants and clinical settings. [1]

Depending on the phase of the clinical trials, in different timelines, different information is collected.

There are 4 phases of clinical trials.

- Phase 1 – a lot of pre-clinical information are obtained in this period. They also provide preliminary assessment of drug activity.
- Phase 2 – It occurs after pre-clinical information are obtained and after the biological activity and some effects are proven.
- Phase 3 – In this phase the efficacy of new medical intervention is assessed. Part of phase 3 clinical trials can be only specific patients that have specific disease or condition that can be treated with the new medication or intervention.
- Phase 4 – This phase occurs after the medication or intervention is approved for usage of patients. The medication is on the market, and it is tested for some new possible Adverse Events that can occurred because of treatment with the new medication. In this phase the side effects that were not seen during the phase 3 of the study are studied. [2]

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- Observational type of clinical trials – During these studies, the patients do not receive any intervention, they’re just observed by clinical team for possible not reported Adverse Events. This usually occurs during phase 4 of a clinical trial.

At phase 1, usually from 20 to maximum of 100 participants are subject on a clinical trial. The subjects that are part of phase 1 clinical trials are healthy volunteers, in this period the pharmacokinetics of the new medication is determined.

At phase 2 of a clinical trial usually 100 to maximum of 300 participants are subject on a clinical trial. The first question that is asked during this phase is if there is some effect of the drug to the targeted disease. The second question that can be particularly answered during this phase is about the dose, level and frequency of the new medication that can influence the disease better.

At phase 3 of a clinical trial there are several hundreds up to several thousand patients on multiple centers. The subjects in this phase are the subjects for whom the new intervention is intended.

This phase can take up to several years before it can be considered as completed.

Once this phase Is completed, the pharmaceutical company can request for FDA approval for the new treatment. The application for FDA approval is called (NDA) New drug application, in the application all the information that the pharmaceutical company has gathered through all the phases is contained.

At Phase 4 of a clinical trial, there are several thousands of volunteers who have the disease that is tested and are using the approved medication. At this phase the effects of approved medication are assessed. Usually, this phase can be ongoing for couple of years before it can be considered as completed. [2]

As mentioned before, the type of the study divides the trials in two groups - interventional type and observational type.

In the first group, the group of Interventional clinical trials, the eligible patients that are part of the study are receiving some kind of new treatment. The study team is evaluating how the patient reacts to the new treatment, are there any expected or not expected adverse events, and if the patient is getting better because of the treatment.

In the second group, the group of Observational clinical trials, usually approved medication is observer for some new possible Adverse Events. Most of them are adverse events that did not occurred during the previous phases of the study, or the adverse events have occurred but with lower severity.

Materials and methods

The research of this study includes a data published on https://clinicaltrials.gov/

It is an online database with information about clinical research studies and the result of the privately and publicly funded clinical studies all around the world. The web page provides information about clinical research studies to the public, to health care professionals and to researchers. There is specialized search tool on the web page that is providing relevant information regarding clinical studies.

The filters that were used to get these results are:

1. Country in which the clinical trials take place, as a country is chosen Republic of Serbia,
2. Period in which the clinical trials take place. The start date is chosen to be 01/01/2020, end date was not chosen. We are taking in consideration all the clinical trials that have started after 01/01/2020.
3. The study phase of the clinical trial in the reported period in Republic of Serbia.
4. The study type of the clinical trial reported in this period in Republic of Serbia.
5. The age of the participants in the clinical trials, younger than 18 years and older than 18 years.
6. Gender of the patients that are part of the clinical trials in Republic of Serbia in this period.

After getting the results, they are sorted into diagrams for better visual display.

Result & discussion

In this study are presented the statistical analysis of the clinical trials conducted in Republic of Serbia in the period after 2020.

The major purpose of this study is to get a conclusion how many clinical trials are conducted in Republic of Serbia, to get a conclusion in which phase of clinical trials are most of the conducted clinical trials in Republic of Serbia, to compare the number of the trails in which the target population of patients are adults and the number of clinical trials in which the target population of patients are kids in Republic of Serbia, what type of clinical tries are taking place in Republic of Serbia and what is the Gender of the targeted population in the clinical trials in this period in Republic of Serbia.

The figures that are shown in this study are publicly available at ClinicalTrials.gov.

According to the statistical information available on ClinicalTrials.gov it can be noticed that in Republic of Serbia in the period after 2020, 339 clinical trials were conducted.

In the period after 2020 in Republic of Serbia from the 339 trials reported, compared by the type of the study, 292 are in interventional type, and 47 are in observational type.

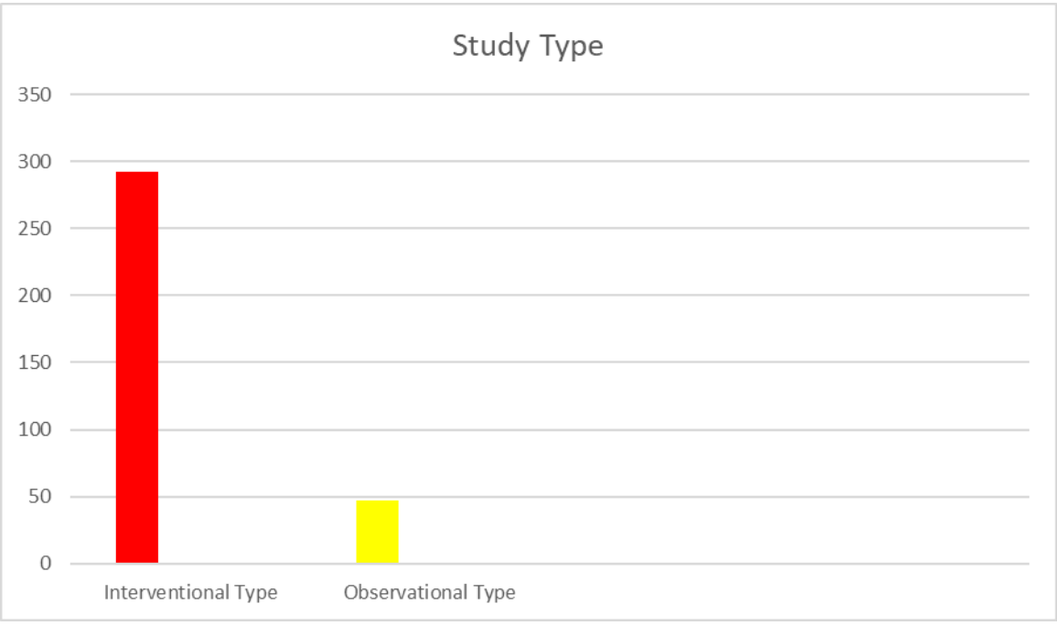

Chart 1. Type of Clinical Trials

According to the statiscial analysis available on ClinicalTrials.gov it can be noticed that from the reported 339 clinical trials in the interventional type in this period, 6 were in phase 1 of the study, 64 were in phase 2 of the study, 170 were in phase 3 of the study and 9 were in phase 4 of the study. For 53 of the studies the phase of the study was not applicable, in this group of 53 studies are studies that are in phase which is not clearly defined by FDA. In this 53 studies included are trials for new devices or behavioral interventions. For 37 of all the reported studies in this period information about the phase in which the study is occurred or occuring are not available.

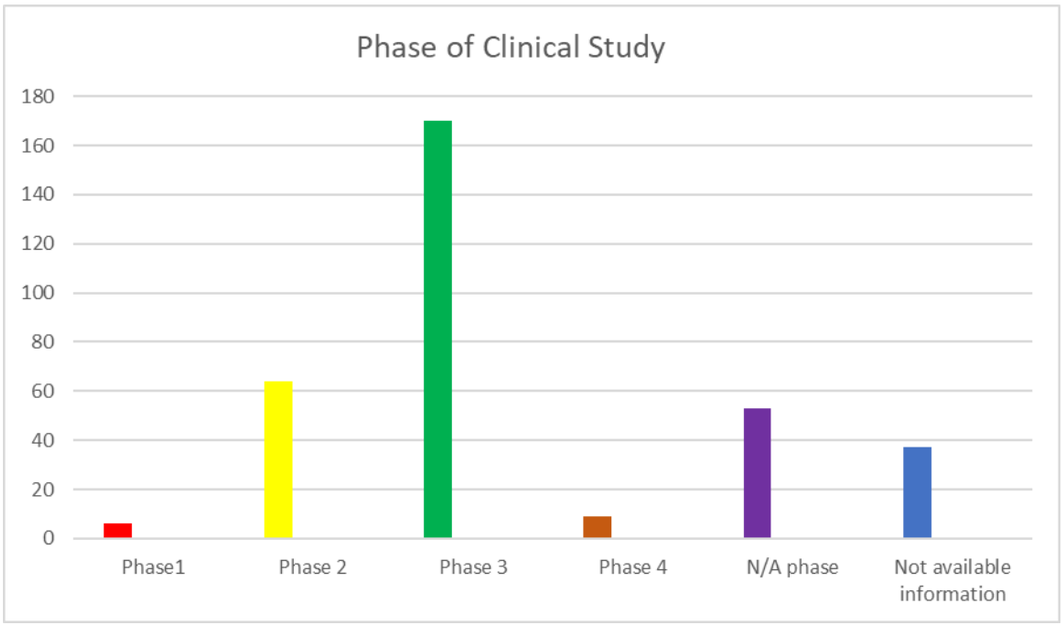

Chart 2. Phase of Clinical Trials in Republic of Serbia after 2020

In the period after 2020, according to the data available on ClinicalTrials.gov, from the 339 reported studies, in 58 of them only kids were the target population, in 281 only adult population were the targeted population.

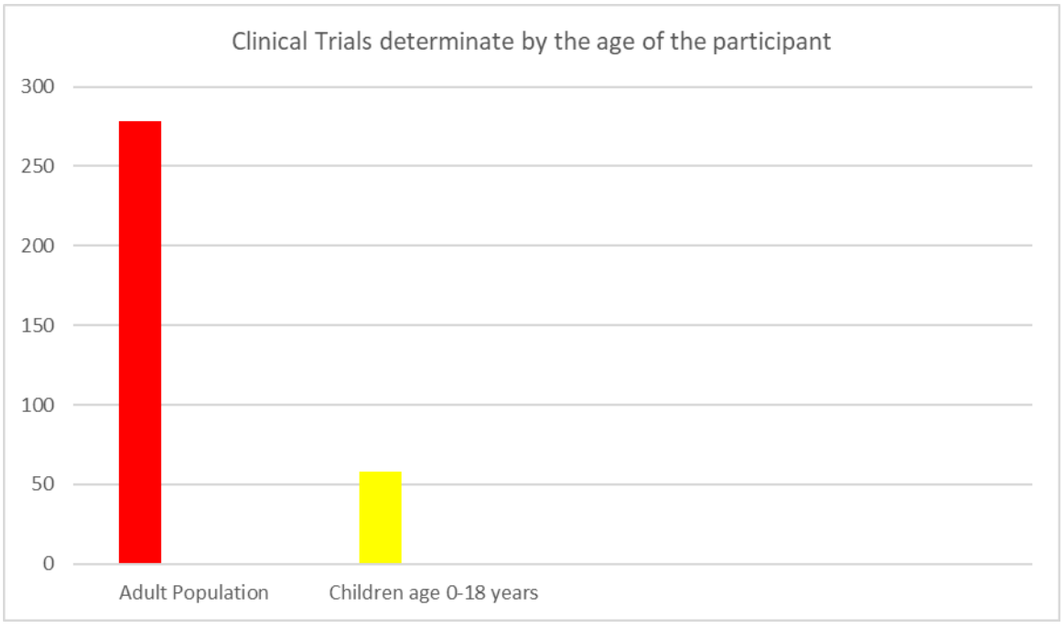

Chart 3. Clinical trials determinate by the age of the participant

According to the statiscial analysis available on ClinicalTrials.gov it can be noticed that from the reported 339 clinical trials, 9 of all the reported have a targeted population only of females, 10 of them have targeted populations only of males, and 329 of all the reported clinical trials were accepting both male and female patients.

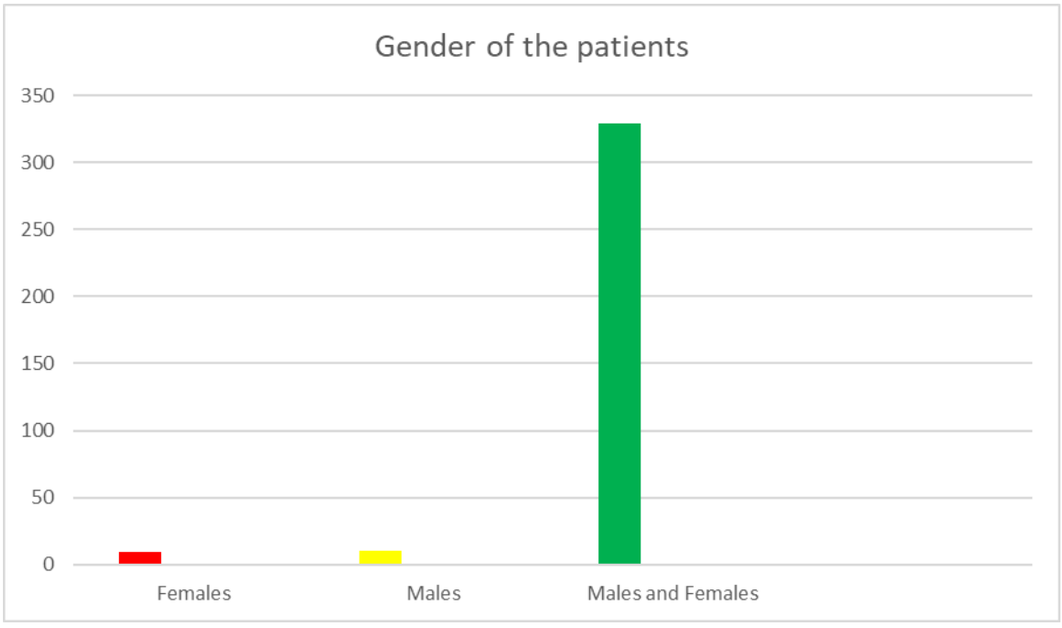

Chart 4. Gender of patients in the clinical trials

Conclusion

The study is based on statistical analysis reported and published on clinicaltrials.gov. From that results and statistical analysis it can be concluded that the number of Clinical Trials in Republic of Serbia in the period after 2020 is not high. In this period there were 339 trials organized.

From this number we can see that the number of clinical trials is not high, and Serbia as a country with a population of 7,358,000 people has a big potential to become one of the leaders in the region for organized clinical trials, however the number of organized clinical trials is still not high. This can be due to the fact that Serbia is not part of the European Union and new laws for organizing clinical trials are required. We can see that the pharma companies are starting to consider Serbia as a potential new region, however still it is going slowly.

With the organized health care system and with the high-quality staff that the Serbian hospitals and research centers have the number of the clinical trials can become higher. Our expectations are that in future the number of clinical trials in Serbia will become higher and Serbia got a big potential for organizing and conducting clinical trials.

The highest number of the clinical trials organized in Republic of Serbia is in phase 3, which is expected because in this phase the safety and efficacy of a new treatment is observed and how well a new treatment can work, compared with previously used treatment.

From all the clinical trials organized in this period the comparation between Interventional type and observational type is as expected. Higher number for the interventional type of clinical trials. This result is expected since in the interventional studies a new treatmen is observed and it is used as an intervention for treatment of a disease, The observational

studies in most of the cases only are observing products that have authorization prior to the start of the observational study, however there is possibility for new information to be secured.

In Republic of Serbia in the period after 2020 are organized more clinical trials in which target population is the adult population compared to the younger population under 18 years. This result can be consiered as expected since the fact that the median age in Serbia is 43.2 years, which is higher compared to other countries. The median age value in the world is 30.5 years. That is why more clinical trials in which target population are the adult patients are conducted compared to the clinical trials in which target population is younger than 18 years.

In Republic of Serbia in the period after 2020, most of the clinical trials have a target population of both males and females. Only 10 of all the clinical trials are targeting just male patients and only 9 of the clinical trials are targeting just female patients. This can be due to the fact that the number of male and female population in Serbia is approxmiately same. 51% of the population are females and 49% are males. [3]

References

[1] Friedman ML et al; Fundamentals of Clinical Trials, Fifth Edition. Springer, 2015

[2] Food and Drug Administration: IND forms and instructions. Development & Approval Process, Drugs; 2022 [www.fda.gov]

[3] Countrymeters.info (Population of the world and countries)