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Establishment and Affirmation of Village Boundaries in Rancabali District, Bandung Regency Based on Ministerial Regulation No. 45 of 2016 with the Principle of Contradictoire Delimitatie

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Abstract: The boundary village is a parapet government administration of the region inter-villages which is a series of coordinates to which points are on the surface of the earth. This study examines the application of the Minister of Home Affairs Regulation Number 45 of 2016 concerning the determination and affirmation of village boundaries in Rancabali Sub-district, Bandung District, West Java Province, Indonesia. The Rancabali sub-district consists of five villages whose boundaries must be affirmed and defined. According to the Minister of Home Affairs Regulation Number 45 of 2016 in the determination and affirmation of village boundaries, it is defined as administrative boundaries inter-villages that are juridical. This study aims to determine and confirm village boundaries based on the methodology contained in Minister of Home Affairs Regulations number 45 of 2016 by producing the village's administrative boundaries from the results of cartometric technical agreements. The data of this study were sourced from village boundary data in a participatory manner by villages in Rancabali Sub District using cartometrics. Because the Minister of Home Affairs Regulation Number 45 of 2016 stipulates that the determination and affirmation of regional boundaries are carried out cartometrically so that the application of this method needs to be carried out on the determination of village boundaries. The results of this research resulted in technical agreements and maps of village/kelurahan administrative boundaries in Rancabali District. In the technical agreement activities carried out, it was possible to identify the boundaries between villages/kelurahan in Sukaresmi Village, the maps of Indragiri Village and Cipelah Village resulted in an agreement. Patengan Village and Alamenda Village still have areas where they disagree.

Keywords: *Contradictoire Delimitatie, Village Boundary, Cartometric, Rancabali Sub-district, and Minister of Home Affairs Regulation Number 45 of 2016*

Introduction

A boundary is a separator between adjoining areas. The form of a boundary can be man-made or natural [5]. Village boundaries are defined as the administrative demarcation of government areas between villages, consisting of a series of coordinate points located on the earth's surface. These coordinate points are then represented on a map and can be seen in natural landmarks such as mountain ridges, slopes, mountains, mountain ranges (watershed), river medians, as well as man-made features present in the field [5]. Law Number 6 of 2014 on Villages regulates the administrative boundaries of villages and prohibits activities that

violate these boundaries. Therefore, the provision of Geospatial Information (GI) for villages can meet needs and support government programs mandated by the Village Law [6]. In the 2020-2024 National Medium-Term Development Plan (RPJMN), through the priority of developing areas to reduce disparities, one of the programs is the establishment of administrative boundaries for villages/sub-districts to support national development priorities.

According to The Regulation of the Indonesian Minister of Home Affairs (Permendagri) No. 45 of 2016 on Guidelines and Affirmation of Village Boundaries, the establishment and affirmation of village boundaries aim to create certainty and clarity in legal and administrative



governance regarding village boundaries, considering juridical and technical aspects. The cartometric method is applied in the process of affirming and determining village boundaries. This method involves drawing and tracing boundary lines on working maps and calculating or measuring the position lines, area coverage, and distance of village territories. To implement this method, the required information includes base maps, satellite imagery, and other geospatial information for completeness [5]. The principle of Contradictoire Delimitatie (boundary agreement) involves the determination of land boundaries by the landowners and the adjacent landowners [3]. The establishment of boundaries is carried out by the landowners and adjacent landowners in a contradictory manner, or in theory, called the principle of Contradictoire Delimitatie [4].

Rancabali District is located in Bandung Regency, West Java Province, Indonesia. Rancabali District was formed as a division from Ciwidey District. According to the participatory village/sub-district boundary tracking data from BIG (Indonesian Geospatial Information Agency), data is already available for Rancabali District. Regional division can lead to the importance of establishing inter-regional boundaries to avoid disputes between areas, and currently, the determination of administrative-territorial boundaries is one of the definite problems in Indonesia [1]. Regional boundaries can cause issues starting from the creation of new autonomous regions, as well as competition over natural resources, impacting a lack of understanding of map boundary lines and local revenue. The creation of territorial boundary maps must comply with relevant regulations and is important to implement to reduce territorial disputes and expedite the boundary establishment process [2].

The creation of village maps has six urgencies, including assessing the potential of the village, its position and surrounding areas, inventorying village assets, resolving regional boundary disputes, and managing village-owned enterprises [2]. According to the Bandung Regency Spatial Planning Document 2007-2021, Rancabali District has been selected as a tourism center. Rancabali District is included in the government's work program as a natural tourism development area. This is because 35% of the natural tourism in Bandung Regency is located in the Rancabali area [7].

Based on the background mentioned, this research indicates the need for a Geospatial Information System (GIS) as a tool for village governments to understand

geographical conditions that can be used for development studies and to identify the potential of the Rancabali District. The abundant potential in this region requires maximum development, especially for natural tourism. The high potential for natural tourism in Rancabali District necessitates the affirmation and establishment of village boundaries in line with the methodology stated in The Regulations of The Indonesian Ministry of Home Affairs (Permendagri) No. 45 of 2016 with the Principle of Contradictoire Delimitatie.

Method

1. Time and Location of the Research

This research will be conducted in Rancabali District, Bandung Regency, West Java Province, Indonesia. Rancabali District is a division of Ciwidey District and is directly adjacent to Cianjur Regency. The map of the research location in Rancabali District is presented in **(Figure 1)**.

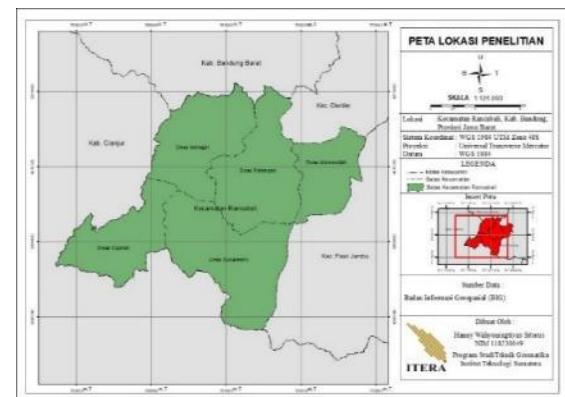


Figure 1. Map of the Research Location.

2. Research Phases

This research utilizes the cartometric method with boundary line tracing/drawing on working maps and measuring/calculating the positions of points, lines, distances, and area coverage using base maps, satellite imagery, and other geospatial information. With this method, the agreement on adjacent village boundaries does not have to be conducted in the field. Data collection is the initial stage. Subsequently, the data processing stage involves tracking boundaries through field surveys, resulting in a temporary boundary display, followed by layouting to obtain the working map. Next is the scheduling and meeting with the village/sub-district authorities, and then the drawing of boundaries

by the respective village authorities around the border area. If an agreement is reached, a new boundary line can be drawn according to the agreed results, leading to the collection of cartometric point data and the agreement record. This is followed by data processing of all the stages of boundary agreement activities, resulting in the creation of a village boundary map. The next steps include analysis, discussion, and report writing. If no agreement is reached between the adjacent villages, scheduling and meetings with the village/sub-district authorities are re-conducted, followed by mediation. If an agreement is reached, the drawing of a new boundary line can continue; if not, both parties of the adjacent villages must sign a disagreement record and then undergo repeated mediation with the Regent. The flowchart is presented in (Figure 2).

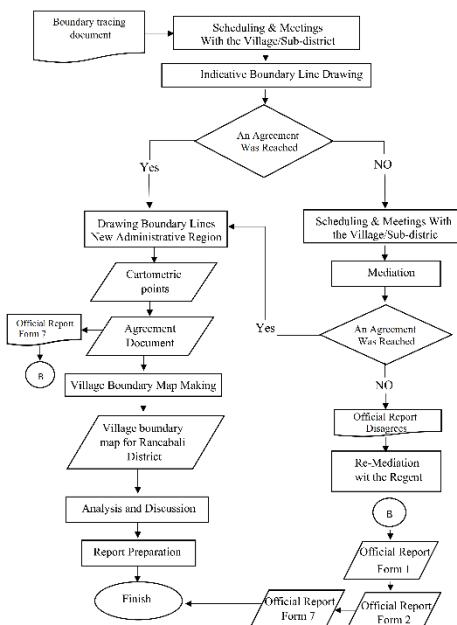


Figure 2. Flowchart.

3. Data

The required data for this research are presented in the **Table 1**.

Table 1. Research Data

No	Data Name	Data Source	Year	Resolution / Scale
1	High Resolution Satellite Imagery (HRIS - SPOT 6), Acquisition years 2018-2020	Geospatial Information Agency	2018	2,5 x 2,5 m
2	Digital data of the Indonesian Topographic Map (RBI) with the largest and most updated scale	Geospatial Information Agency	2020	1:10.000
3	Indicative data of village administrative boundaries from village mapping	Geospatial Information Agency	2019	1:5.000
4	Data on the tracking of village boundaries	Geospatial Information Agency	2021	1:5.000

The equipment used to support this research consists of hardware and software, which includes:

1. Laptop
2. GIS-based cartography software
3. Word processing software
4. Citation management software

Results and Discussion

1. Tracking Data Results



Figure 3. Tracking Data Results.

The tracking data of village boundaries were obtained through field survey activities or field checks. The determination of boundary positions was conducted in the field to establish the boundary positions directly per the specified technical specifications. The results of the village boundary tracking yielded boundary coordinate points. Village officials from each village were responsible for

tracking the village boundaries in the field for the stage of establishing and affirming the administrative boundaries of the village. This tracking data aims for acceleration and is used for the creation of working maps. In the tracking data results in Rancabali District (**Figure 3**), there are areas with overlapping claims between Patengan Village and Alamendah Village that have not yet been affirmed, which will be processed with stages of affirmation and establishment of village boundaries to achieve a mutual agreement.

2. Creation of Working Maps

An important stage in the affirmation of village/sub-district boundaries is the creation of working maps, which are used as a medium to ratify the technical agreement of the village/sub-district. The working maps are created on A3 paper with a scale adjusted to the area of the mapped village. The face of the map displays information such as temporary village/sub-district boundary lines obtained from the cartometric tracking data of the village.

In addition to the face of the map, the working map also contains marginal information displaying the map title, regional code, orientation, graphic scale, location diagram, map placement guide, projection, grid system, map legend datum, signature column, map source, and map history. The inclusion of a signature column in the working map serves as an authentication element that the boundary line drawing process is conducted by the respective village. The working map is printed after the village/sub-district authorities and their apparatus have drawn their boundary lines. The visualization of the working map is presented in (**Figure 4**).



Figure 4. Working Map.

3. Cartometric Points

Along all existing boundary segments, cartometric points are placed. These points contain data about the coordinates

of the point as well as the adjacent areas to the cartometric point. The determination of these cartometric points is quite efficient as each point represents the boundary of each respective area. There are 93 cartometric points spread across Rancabali District, numbering according to the Minister of Home Affairs Regulation No. 45 of 2016 on Guidelines for Establishment and Affirmation of Village Boundaries. The numbering of cartometric points is as follows: TK (provincial area code).(regency/city area code).(first district area code).(first village/sub-district area code)-(second district area code).(second village/sub-district area code) cartometric point number. The numbering of cartometric points and the coordinate information of each point in this study can be seen in Appendix A. The area codes located on the village boundary lines in Rancabali District can be seen in **Table 2**.

Table 2. Province and Regency Code.

Code	Province	Code	Regency/City
32	Jawa Barat	04	Bandung
		17	Bandung Barat
		03	Cianjur

Table 3. District and Village Code.

Code	District	Code	Village	TK Code
40	Rancabali	2001	Patengan	32.04.40.2001
39		2002	Sukaresmi	32.04.40.2002
38		2003	Indragiri	32.04.40.2003
		2004	Cipelah	32.04.40.2004
		2005	Alamendah	32.04.40.2005
		2001	Lebak	32.04.39.2001
			Muncang	
		2004	Panundaan	32.04.39.2004
		2009	Sugihmukti	32.04.38.2009

4. Cartometric Boundary Drawing

Scheduling is the first thing arranged before the activities are carried out. The large number of villages/urban communities poses a unique challenge in scheduling, but with coordination and assistance from related parties, it can proceed smoothly. Drawing boundary lines for villages/urban communities in some areas is quite sensitive, as one of the reasons is the existence of livelihood sources (natural resources) from each village/urban community around the

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border, leading to potential conflicts during the process. Providing comprehensive explanations and approaches to this activity is essential to ensure that the activity runs smoothly and safely.

The working map that has been signed and stamped by the village/sub-district authorities, resulting from this phase, serves as authentic evidence that the boundary lines drawn were carried out by the respective village/sub-district authorities. Another document produced from this village/sub-district boundary drawing is the official record, which in this activity follows the acceleration system of BIG (Indonesian Geospatial Information Agency) to minimize the risk of losing too many forms. The working map and the execution record can be seen in (Figure 5).

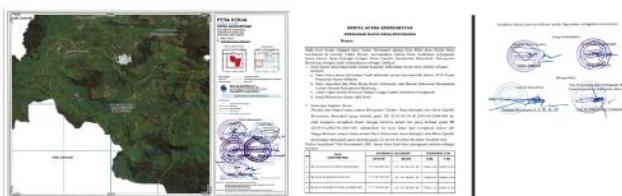


Figure 5. Example of a working map and official record.

5. Official Record of Agreement

According to the Indonesian Minister of Home Affairs Regulation (Permendagri) No. 45 of 2016 regarding Guidelines and Affirmation of Village Boundaries, part three, which covers the affirmation of village boundaries in articles 14 and 15, explains that each stage of boundary affirmation is recorded in an official record of agreement between adjacent villages, signed by the heads of the adjacent villages and the district/city PPB (Boundary Settlement Team), followed by the ratification of village boundaries as explained in article 16. The establishment of these boundaries is carried out by the landowners and adjacent landowners in a contradictory manner, known as the principle of Contradictoire Delimitatie or Contradictory Delimitation. The principle of Contradictoire Delimitatie is evidenced by a declaration signed by the landowners and adjacent landowners and by the Village Head or Sub-district Head. This aims to avoid future land disputes and conflicts. Therefore, before the measurement is carried out, it is mandatory to fulfill the principle of Contradictoire Delimitatie.

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Boundary Line Data Processing

The spatial data obtained from the cartometric method of drawing village/sub-district boundaries are processed through several stages. The first process is the edge matching of boundaries, aiming to align the boundary line segments between each district. The second process involves creating a geodatabase containing polyline and polygon feature datasets for the boundary line segments and the coverage area of villages/sub-districts. This geodatabase adheres to the standards of the Indonesian Geographic Element Catalog (KUGI). Once the geodatabase is established, the next step is to perform topology validation to eliminate errors, with editing processes conducted if errors are found. Subsequently, the process of forming administrative area polygons for villages/sub-districts from the boundary lines is carried out. After processing data from all stages of the village boundary agreement activities, a map of the village boundary area can be produced.

5.1 Patengan Village Map

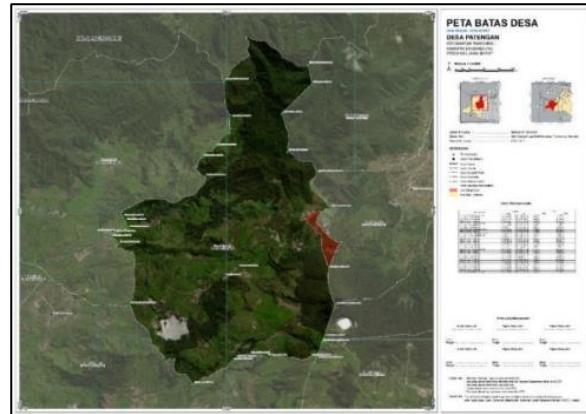


Figure 6. Patengan Village Boundary Map.

The implementation of this research produced a map of the boundaries of Patengan Village, Rancabali District, with the area code 32.04.40.2001, shown in (Figure 6). The information generated includes boundary segments, area size, cartometric coordinates, and the plan for boundary pillars. The agreed administrative boundary area of Patengan Village is 3532.53 hectares, and there are 29 Cartometric Points. The Patengan Village Boundary Map shows three types of areas: overlapping claim areas, non-overlapping claim areas, and undefined areas, which can be seen in (Figure 7).



Figure 7. Overlapping Claim Areas, Non-Overlapping Claim Areas, and Undefined Areas.

The overlapping claim area, covering 45.63 hectares, results from boundary drawing without an agreement, where each village/urban community is allowed to draw boundary lines based on their data and information. The undefined area, covering 2.63 hectares, turns out to be an area unrecognized by the village, thus becoming no man's land, with the adjacent village authorities not claiming ownership of this area.

The areas that have not been agreed upon are due to differing interpretations of boundary drawings by the adjacent villages. The boundary segments in the not agreed-upon areas, in the southwest direction, follow the shrubbery until meeting the shrubbery located at TK 32.04.40.2001-40.2005-001, then continue southwest through the disagreed area until meeting the forest at TK 32.04.40.2001-40.2005-002, and then proceed south along the forest until reaching the boundary junction point. The boundary drawing in the not agreed-upon areas according to each village can be seen in **Figure 8**.



Figure 8. Unagreed Areas Between Adjacent Villages.

The village boundary according to Patengen Village follows the plantation towards the southwest (yellow line), and the village boundary according to Alamendah Village follows the plantation towards the southeast (red line).

5.2 Sukaresmi Village Map

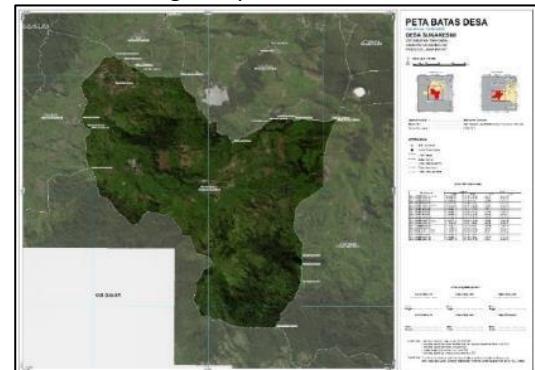


Figure 9. Overlapping Claim Areas, Non-Overlapping Claim Areas, and Undefined Areas.

The implementation of this research produced a map of the boundaries of Sukaresmi Village, Rancabali District, with the area code 32.04.40.2002, as shown in **Figure 9**. The information generated includes boundary segments, area size, cartometric point coordinates, and the plan for boundary pillars. The agreed administrative boundary area of Sukaresmi Village is 4381.32 hectares, with 20 Cartometric Points and 5 junction points within it, where each boundary segment line has points spread out representing the boundary in each area. These points contain data about the coordinates at the point location and the adjacent areas to the cartometric point. There are no issues with the boundary segments as all adjacent areas have agreed and do not cause any problems related to the established boundary lines.

5.3 Indragiri Village Map

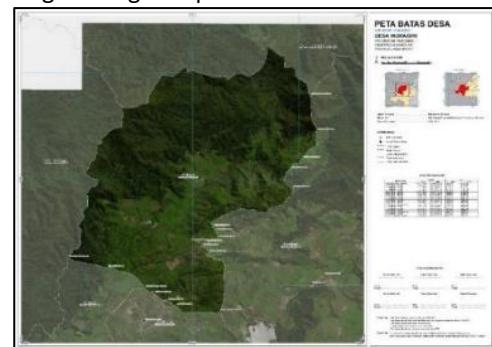


Figure 10. Indragiri Village Boundary Map.

The implementation of this research produced a map of the boundaries of Indragiri Village, Rancabali District, with the area code 32.04.40.2003, as shown in **Figure 10**. The information generated includes boundary segments, area size, cartometric point coordinates, and the plan for boundary pillars. The agreed administrative boundary area of

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Indragiri Village is 3291.65 hectares, with 18 Cartometric Points and 4 junction points within it, where each boundary segment line has points spread out representing each area. These points contain data about the coordinates of the point location and the adjacent areas to the cartometric point. There are no issues with the boundary segments as all adjacent villages have agreed and do not cause any problems related to the established boundary lines.

5.4 Cipelah Village Map

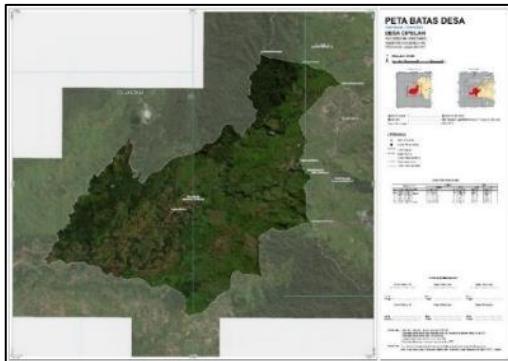


Figure 11. Cipelah Village Boundary Map.

The implementation of this research produced a boundary map of Cipelah Village, Rancabali District with area code 2.04.40.2004, as shown in **Figure 11**. The information generated includes boundary segments, area size, cartometric point coordinates, and the plan for boundary pillars. The agreed administrative boundary area of Cipelah Village is 2669.29 hectares, with 7 Cartometric Points and 3 junction points within it, where each boundary segment line has points spread out representing each area. These points contain data about the coordinates of the point location and the adjacent areas to the cartometric point. There are no issues with the boundary segments as all adjacent villages have agreed and do not cause any problems related to the established boundary lines.

5.5 Alamendah Village Map

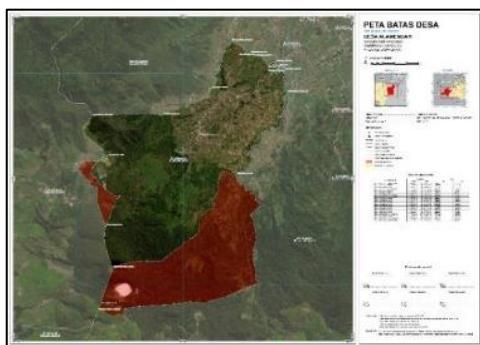


Figure 12. Alamendah Village Boundary Map.

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The implementation of this research also produced a boundary map of Alamendah Village, Rancabali District with area code 32.04.40.2005, as shown in **Figure 12**. The information generated includes boundary segments, area size, cartometric point coordinates, and the plan for boundary pillars. The agreed administrative boundary area of Alamendah Village is 1402.56 hectares, with 19 Cartometric Points and 5 junction points within it. The Alamendah Village Boundary Map shows three types of areas: overlapping claim areas, non-overlapping claim areas, and undefined areas. There is an overlapping claim area with Patengan Village covering 45.63 hectares and an undefined area covering 2.63 hectares, which is unrecognized by the adjacent villages and lies between Alamendah and Patengan Village.

There is a disputed overlapping claim or boundary segment between Alamendah Village and Sugihmukti Village covering 660.99 hectares. This disagreement is often triggered by tracking data, village history, and the potential of the related village. Both villages are adamant about claiming land believed to have the potential to increase their respective local revenue. The boundary drawing in the not agreed-upon areas according to each village can be seen in **Figure 13**.



Figure 13. Areas that have not been agreed upon.

In the unagreed areas, both villages have different interpretations of boundary drawing. The village boundary according to Sugihmukti Village follows the river towards the southwest (green line), and the village boundary according to Alamendah Village follows the river towards the southeast (red line). Due to the disagreement, both villages must sign an Official Record of Disagreement, which will leave the decision of territory division to the Regent/Mayor. This decision will be recorded in the Official Record. The resolution of village boundary disputes must be completed within a maximum period of 6 months, as stipulated in Article 18 of The Indonesian Minister of Home Affairs Regulation (Permendagri) No. 45 of 2016.

Conclusion

Based on the processing and analysis that has been done, the following conclusions can be drawn:

In the process of establishing and affirming village/sub-district boundaries regulated by Minister of Home Affairs Regulation No. 45 of 2016, the use of the method of tracing village boundary lines on maps allows agreements of adjacent village boundaries without having to be conducted in the field. The cartometric method, supported by various technologies, has been proven effective to implement in the activities of establishing and affirming village or urban community boundaries, thus speeding up the mapping process.

Based on the technical agreement activities conducted, it is known that the boundaries between villages/urban communities in Sukaresmi Village, Indragiri Village, and Cipelah Village have reached an agreement. However, Patengan Village and Alamendah Village still have areas of disagreement. This disagreement is due to differences in the tracking lines between adjacent villages/urban communities. This disagreement ultimately requires both village parties to sign an Official Record of Disagreement, indirectly leaving the decision of territory division for both to be directly decided by the local Regent.

Conflict of Interest

There is no conflict of interest in this research.

Acknowledgments

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